

UROSKOP D

SP

Service
Unit/Generator

Adjustment Instructions

Register 1

RLL5-310.071.01.03.02

Replaces: RLL5-310.071.01.02.02

English

05.96

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Safety note

- Because of the technologies used in the UROSKOP D, it is absolutely essential that service tasks be performed only by specially trained servicing staff.

Attention! When carrying out the work steps and tests, the safety notes contained in the product-specific documentation, as well as the general safety notes contained in Register 2 of the TI binder must be observed.

Checks and adjustments that must be carried out with radiation switched on are marked with the radiation warning symbol . During all procedures marked with this symbol, radiation protective clothing must be worn.

Required documentation

- Wiring diagram for UROSKOP
 - D1 G5353
 - D2 G5354
 - D3 G5403
- Functional description for UROSKOP D
- Installation of the service software RLL5-310.113.01.02
- UROSKOP D, Handling the service software RLL 5-310.113.02. ...
- MEMOSKOP 2K/50, Service instructions RX57-029.061.01...
- MULTISPOT 2000, Setting instructions RX57-091.032.01..

Required tools, measuring instruments and devices

- Usual service tools
- Digital measuring instrument with mAs range (e.g. Fluke)
- Service PC
- Angle spirit gauge 28 69 436 RE 999
- Siemens tomographic definition test 44 06 054

Attention: *Performing system settings with satisfactory accuracy is possible only with the measuring instruments and devices indicated above.*

Using the service software

Calling up the service software

- First terminate all programs running. The system message below is then displayed:

C:\>

- Then exit to the subdirectory containing the service software (e.g. UROSKOPD):

C:\>cd uroskopa <ENTER>

- The program can now be started with the command

C:\UROSKOPA>service <ENTER>

The form below is then displayed on the monitor (Fig.1).

SERVICE VA....		
Unit:	Service Program for RD-Products Copyright (c) Siemens UBmed, Erlangen, 1990	02 . 06 . 92 08 : 41 : 23
<div style="border: 1px solid black; padding: 10px; margin: 20px auto; width: 60%;">Username:</div>		
<hr/>		
1 Help	2	3 4 5 6 7 8 9 10

Fig. 1

Options

The following options are possible for calling the program:

- `service /c` The command **service /c** switches the display to color mode. This is only meaningful with PCs having a color monitor.
- or
- `service /s` The command **service /s** switches the software to the **Simulation mode**, i.e., you can call nearly all service program functions without connecting the unit. This operating mode is useful to assist you in becoming familiar with the service software.

Program start

In the entry form (Fig. 2) of the service software, a query first appears to request the name of the service engineer (Username) and the password.

Note: *For reasons of data security, the password to be used here is communicated as Opsis Speed Info. You can take this information from this Info.*

While entering the password only symbols (*) are displayed and no letters. If you enter an incorrect password, a request to repeat the entry appears. After three erroneous attempts, the program is terminated.

After concluding all entries with ENTER, the names of the configuration files are queried (Fig. 3). The configuration files are system-specific files. They are on the disk with the service software. The names of the files are given in the test certificate, Logbook, Register 3, page 8.

A typical entry at this point would be, for example:

a: UROØ1001

The specifier a: loads the data from disk drive A. If the disk drive for your PC has a different designation, then use this.

.. URO .. stands for UROSKOP D and .. Ø1001 .. for the serial number of the system (example)

SERVICE VA....

Unit:	Service Program for RD-Products Copyright (c) Siemens UBmed, Erlangen, 1990	13 . 05 . 92 08 : 48 : 48
-------	--	------------------------------

Username: XYZ

Password : xxxxxxxx

1 Help 2 3 4 5 6 7 8 9 10

Fig. 2

SERVICE VA....

Unit:	Service Program for RD-Products Copyright (c) Siemens UBmed, Erlangen, 1990	13 . 05 . 92 08 : 48 : 48
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Name for configuration files: *

ESC

* system-dependent

1 Help 2 3 4 5 6 7 8 9 10

Fig. 3

Initialization

During the next step, the service software checks whether the unit connected is initialized.
For this purpose, certain data (e.g. the date and time of day) are transmitted from the unit to the PC. A search is also performed for a so-called header file, which contains information about the data file management of the unit.
Normally, the unit is already initialized in the test field. In this case, the form with the main menu is immediately displayed, as in Fig. 4.

SERVICE VA...		ONLINE	BUSY
Unit: VA0	Product: UROSKOP D Engineer: XYZ	Group : S	13 . 05 . 92 08 : 53 : 51

Main menu

Info database

Unit parameters

Unit state

Unit errors

Calibration

Options

Download

1 Help

2 Config.

3 Restar

4

5

6

7

8

9

10

Fig. 4

If no header file can be found, you arrive at the form shown in Fig. 5. This is the case e.g. whenever a system fault erases the EEPROMs. You must then respond to the query:

May I do the initialization automatically (y/n)

with yes (y).

Then perform the Download.

Following this, the main menu functions are then available again.

SERVICE VA...	ONLINE	BUSY
Unit:	Service Program for RD-Products Copyright (c) Siemens UBmed, Erlangen, 1990	13 . 05 . 92 08 : 50 : 26

The unit is not initialized. To initialize it, the following steps have to be done:

1. Reading calibration parameters from a file
2. Sending the parameters to the unit
3. Setting the realtime clock in the unit

May I do the initialization automatically? (Y/N)

12345678910

Fig. 5

Motor service board 11 14 854 G 5347

- System **OFF** and **Actuate** an emergency stop button on the unit.
- Short the magnetic brake control of the corresponding motor (wiring diagram!).

Brake		Jumper
MB 2	Table lift	M20X3.5 – M20X3.2 (0V)
MB 3	System tilt	M20X3.6 – M20X3.2 (0V)
MB 7	Table longitudinal	M20X3.7 – M20X3.2 (0V)
MB 4	Column tilt	M20X3.8 – M20X3.2 (0V)

- Remove the corresponding motor board.

Platine D20A	Platine D20B
Table lift am 2	System tilt am 3
Table longitudinal am 7	Column tilt am 4

- Insert the jumpers correctly on the service board (see also wiring diagram).

Attention: *Insert the jumpers correctly as required by the direction of travel, since parts of the unit could otherwise be damaged.*

	0V (X2)	30 V (X3)	Motor	Direction
Service board at position D20A	X4	X5	Table longit	to foot end
	X5	X4	Table longit	to foot end
	X6	X7	Table lift	downwards
	X7	X6	Table lift	upwards
Service board at position D20B	X4	X5	Column tilt	– 15°
	X5	X4	Column tilt	+ 15°
	X6	X7	System tilt	Trendelenburg
	X7	X6	System tilt	upright unit

- System **ON**.
- Continue actuating K1 manually until the motor drives to the desired position.
- System **OFF**.
- Remove the service board and insert the motor board again.
- Remove the jumper for the magnetic brake.
- Unlock the emergency stop button.

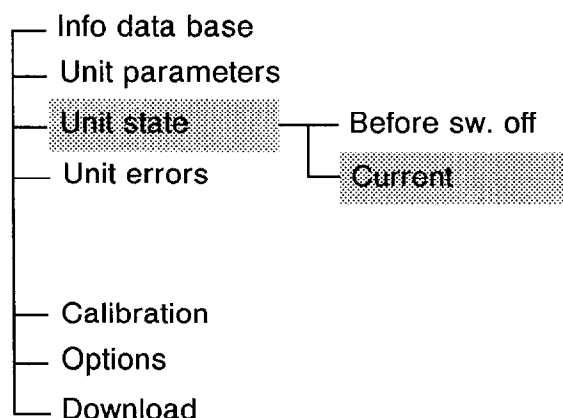
Positioning errors

POS Vgl\$ Error (Error code 418x)

This error message occurs when the difference between the actual position of the A/D converter and the actual position of the motor controller (encoder) is greater than 100

$$(|\text{Pos}_{\text{A/D}} - \text{Pos}_{\text{MC}}| > \text{admissible deviation (programmed parameter, e.g. 100)})$$

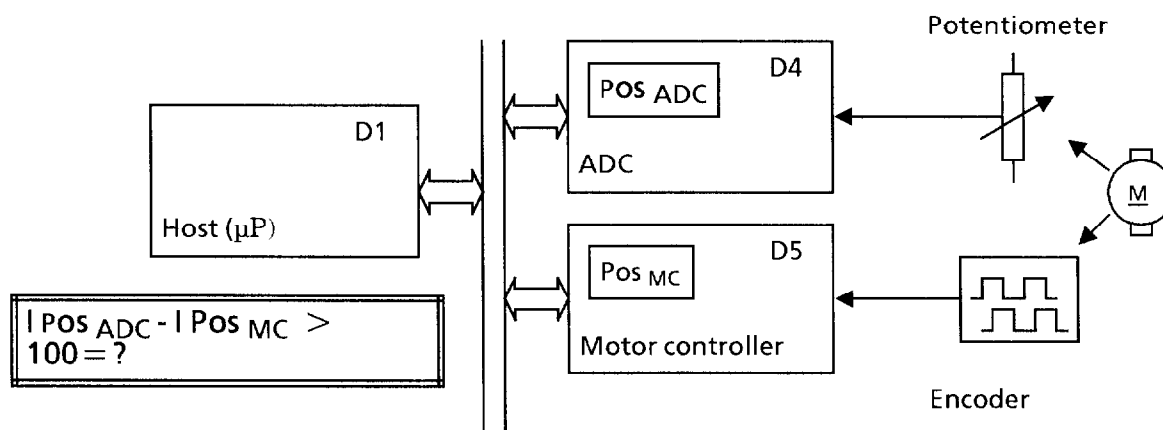
Main menu



- In menu item "Current" the corresponding values for
calculated position (A/D converter/Host)
calculated position motor controller

are read, compared and actuated with F4.

The difference between the two values must be as small as possible (values for test up to 50 are acceptable).



Service guidelines for Uroskop D1 with POLYDOROS SU, Sirecon Compact and Memoskop 2K

Settings on the basic unit

Uroskop D	Service, unit/generator Adjustment instructions	RLL5-310.071.01...
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Settings on the generator

Polydoros S	Start-up instructions System configuration with the PT 510	R67-010.034.07...
Iontomat P	Installation and setting instructions Service instructions	R67-010.033.02... R69-020.061.01...
Polymatik PE system	Polydoros S Start-up instructions System configuration with the PT 510 Installation and setting instructions Polymatik	R67-010.034.07... R52-021.033.26...

Settings on the Sirecon Compact I.I. TV system

Uroskop D	Service, unit/generator Adjustment instructions Chapter 12 "Adjustment of the TV components"	RLL5-310.071.01...
Sirecon Compact	Adjustment instructions Videomed K, TV camera 525/625 lines	R52-031.071.01...
TV monitor	SIMOMED N X2079 - Monitor 44 cm 60Hz According to the installed videoamplifier or Serial No.	RLR2-120.071.04... RR2-120.071.02...

MEMOSKOP 2K

Service instructions	RX57-029.061.01...
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Setting of MULTISPOT 2000 (Option)

Setting instructions	RX57-091.032.01...
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Image quality for universal systems

RXD0-000.064.01...
Register 2 Chapter
1;2;3;4;5F

Service guidelines for Uroskop D1 with POLYDOROS LX, VIDEOMED DI and MEMOSKOP 50

Settings on the basic unit

Uroskop D Service, unit/generator RLL5-310.071.01...

Settings on the generator

Iontomat Dose Videomed DI, tube assembly,
Polydoros LX, Start-up instructions
System configuration with the Service PC RX63-020.034.05...
Polydoros LX, Adjustment instructions RX63-020.071.01...

Settings on the VIDEOMED DI

Service instructions, Videomed DI/DIM/DIK RX52-022.061.01...

Settings on the TV monitors

Simomed N X2080,
Monitor 44 cm 60Hz
According to the installed videoamplifier or Serial No.
RLR2-120.071.04...
RR2-120.071.02...

Memoskop 50

Service instructions RX57-029.061.01...

Setting of MULTISPOT 2000 (Option)

Setting instructions RX57-091.032.01...

Image quality for universal systems

Register 2 Chapter 1;2;3;4;5G RXD0-000.064.01...
(IQC RXD0-000.037.04.. Videomed DI possible)

Service guidelines for UROSKOP D2 with POLYDOROS SU, VIDEOMED N1/DG-Saticon and MEMOSKOP 50

Settings on the basic unit

Uroskop D	Service, unit/generator	RLL5-310.071.01...
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Settings on the generator

Polydoros S	Start-up instructions	
	System configuration with the PT 510	R67-010.034.07...
Iontomat P	Installation and setting instructions	R67-010.033.02...
	Service instructions	R69-020.061.01...
Plani-Iontomat P	Installation and setting instructions	R67-010.033.05...
Polymatic P system	Polydoros S Start-up instructions	
	System configuration with the PT 510	R67-010.034.07...
	Installation and setting instructions, Polymatic	R52-021.033.26...

Settings on the VIDEOMED N1 (DG-Saticon)

Adjustment instructions, Videomed N/1 625/525 lines X1927 / X1929 with videoamplifier L9	R52-021.071.11...
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Settings of the PS2 board

Adjustment instructions	R52-040.071.18...
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Settings on the TV monitors

Simomed N X2080, Monitor 44 cm 60Hz According to the installed videoamplifier or Serial No.	RLR2-120.071.04... RR2-120.071.02...
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MEMOSKOP 50

Service instructions	RX57-029.061.01...
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Setting of MULTISPOT 2000 (Option)

Setting instructions	RX57-091.032.01...
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Image quality for universal systems

RXD0-000.064.01... Register 2, Chapter 1;2;3;4;5E and 8C
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Service guidelines for UROSKOP D2 with POLYDOROS SX, VIDEOMED N1/DG-Saticon and MEMOSKOP 50

Settings on the basic unit

Uroskop D Service, unit/generator RLL5-310.071.01...

Settings on the generator

Polydoros SX 50/80
Start-up instructions RX63-050.034.06...
Iontomat
Plani-Iontomat
Dose rate/Dose (SDM)
Tube assembly settings
TV iris diaphragm
Skin-dose rate

DIAMENTOR (Option)

Installation-and Setting instructions RX63-050.033.01...

Settings on the VIDEOMED N1 (DG-Saticon)

Videomed N/1 625/525 lines,
X1927 / X1929 with videoamplifier L9
Adjustment instructions R52-021.071.11...

Settings of the PS2 board

Adjustment instructions R52-040.071.18...

Settings on the TV monitors

Simomed N X2080
Monitor 44 cm 60Hz
According to the installed videoamplifier or Serial No. RLR2-120.071.04...
RR2-120.071.02...

MEMOSKOP 50

Service instructions RX57-029.061.01...

Setting of MULTISPOT 2000 (Option)

Setting instructions RX57-091.032.01...

Image quality for universal systems

RXD0-000.064.01...
Register 2 Chapter
1;2;3;4;5E and 8C

Service guidelines for UROSKOP D3 with POLYDOROS SU, VIDEOMED H1X and FLUOROSPOT H

Settings on the basic unit

Uroskop D	Service, unit/generator	RLL5-310.071.01...
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Settings on the generator

Polydoros S	Start-up instructions	
	System configuration with the PT 510	R67-010.034.07...
Iontomat P	Installation and setting instructions	R67-010.033.02...
	Service instructions	R69-020.061.01...
Plani-Iontomat P	Installation and setting instructions	R67-010.033.05...
Polymatic P system		
	Polydoros S Start-up instructions	
	System configuration with the PT 510	R67-010.034.07...
	Installation and setting instructions, Polymatic	R52-021.033.26...

Settings on the VIDEOMED H1X

Adjustment instructions, Videomed H1X	R52-040.071.19...
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Settings of the PS2 board

Adjustment instructions	R52-040.071.18...
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Settings on the TV monitors

Simomed 90H 44cm	
Adjustment instructions	RA52-040.071.01...
Service note, Simomed 90H	RX52-040.076.01...

Settings on the FLUOROSPOT H

Camtronics binder

Image quality for universal systems

RXD0-000.064.01...
Register 2 Chapter 1;2;3;4;5A,C,D and 8A

Service guidelines for UROSKOP D3 with POLYDOROS SX, VIDEOMED H1X and FLUOROSPOT H

Settings on the basic unit

Uroskop D Service, unit/generator RLL5-310.071.01...

Settings on the generator

Polydoros SX 50/80
Start-up instructions RX63-050.034.06...

Iontomat
Plani-Iontomat
Doserate/Dose (SDM)
Tube assembly settings
TV iris diaphragm
Skin-dose rate

DIAMENTOR (Option)

Installation and setting instructions RX63-050.033.01...

Settings on the VIDEOMED H1X

Adjustment instructions, Videomed H1X R52-040.071.19...

Settings of the PS2 board

Adjustment instructions R52-040.071.18...

Settings on the TV monitors

Simomed 90H 44cm
Adjustment instructions RA52-040.071.01...
Service note, Simomed 90H RX52-040.076.01...

Settings on the FLUOROSPOT H

Camtronics binder

Image quality for universal systems

RXD0-000.064.01...
Register 2 Chapter
1;2;3;4;5A, C ,D and
8A

Service guidelines for UROSKOP D3 with POLYDOROS SX, VIDEOMED SX and FLUOROSPOT H

Settings on the basic unit

Uroskop D	Service, unit/generator	RLL5-310.071.01...
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Settings on the generator

Polydoros SX 50/80		
	Start-up instructions	RX63-050.034.06...
Iontomat		
Plani-Iontomat		
Dose rate/Dose (SDM)		
Tube assembly settings		
TV iris diaphragm		
Skin-dose rate		

DIAMENTOR (Option)

	Installation and setting instructions	RX63-050.033.01...
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Settings on the VIDEOMED SX

	Setting instructions , Videomed SX	RX52-041.032.01...
	Videomed S/S-C, Parameters	
	Service instructions	RA52-041.061.02...

Settings on the TV monitors

Simomed 90H 44cm		
	Adjustment instructions	RA52-040.071.01...
	Service note, Simomed 90H	RX52-040.076.01...

Settings on the FLUOROSPOT H

Camtronics-Binder		
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Image quality for universal systems

	RXD0-000.064.01...
	Register 2 Chapter
	1;2;3;4;5H and 8A
	or IQC
	RXD0-000.037.04...

UROSKOP D1/D2/D3 Basic unit

Repair instructions

1.) Removal of the spotfilm device	RLL5-310.091.01..
2.) Exchange of the pneumatic spring	RLL5-310.091.02..
3.) Removal of transverse carriage and patient table	RLL5-310.091.03..
4.) Replacement of the lift cyliner	RLL5-310.091.04..
5.) Encoder Replacement	RLL5-310.091.05..
6.) Replacement of the cassette transport belts	RLL5-310.091.06..
7.) Exchange of the potentiometer R103	RLL5-310.091.07..

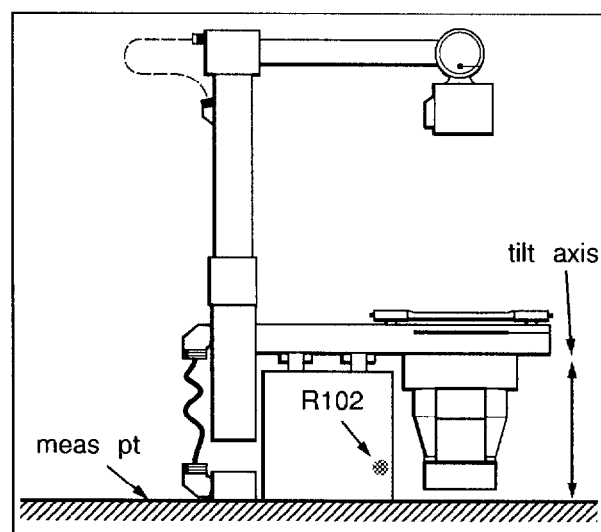


Fig.1

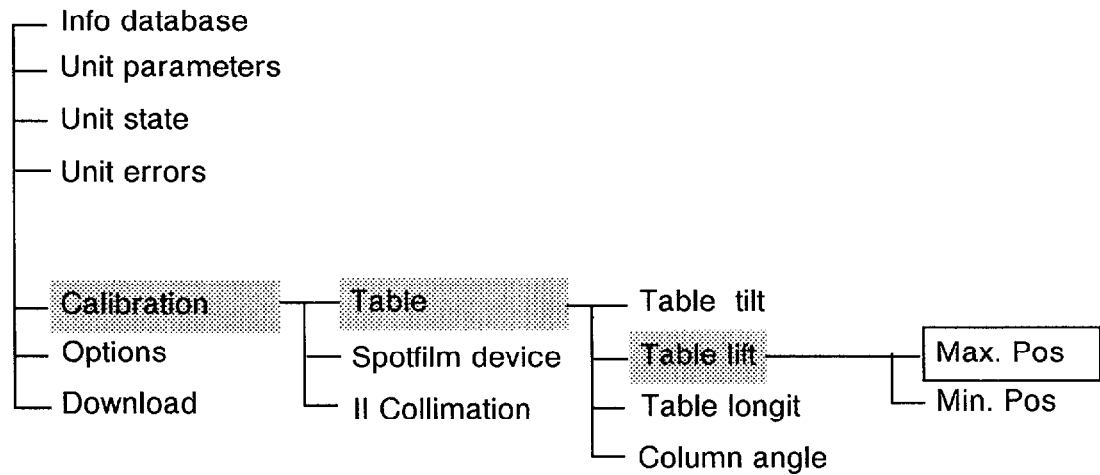
UROSKOP D systems without (and with) measuring marks

Dimensions:	lower:	upper:
mechanical stop:	610 mm	1105 mm
safety limit switch:	s21, 615 ± 1 mm	s22, 1087 ± 1 mm
table:	620 mm ± 1 mm	1080 mm ± 1 mm

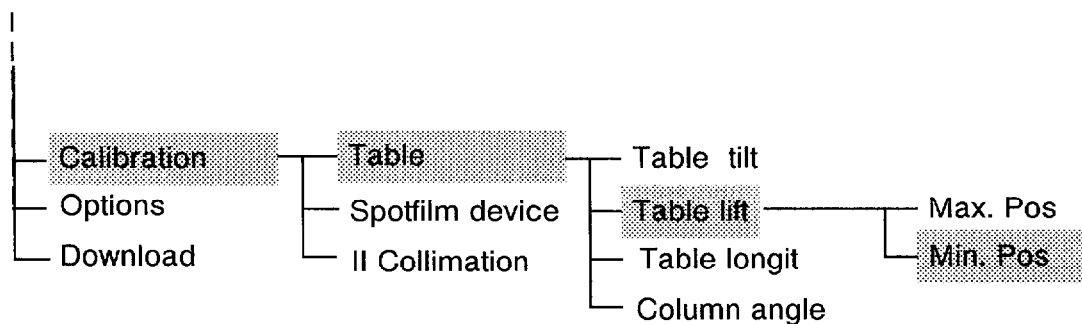
Reference: Lower edge of lifting base (without insulation and unit body) to center of tilting axis

- System OFF.
- Replace the defective potentiometer R102.
Note: Do not unscrew the rack while replacing the potentiometer.
 - Unscrew the white plastic block.
 - Unsolder the cable from the potentiometer.
 - Unscrew the potentiometer with its holding fixture.
- Install the new potentiometer R102
- System ON.
- Raise the table to 865 mm in calibration mode (Fig. 1).
- Set the newly installed potentiometer so that the wiper measures 50% of the potentiometer's operating voltage.
- Tilt the table to + 88°.
- Perform the calibration program for the maximum and minimum table lift positions with the service software.
 min. pos.: 620 mm max. pos.: 1080 mm
 measured between lifting base lower edge and table rotary axis

Main menu



- In the calibration mode, move the table to exactly 1080 mm (lifting base ⇔ table tilting axis).
- Store the ADC value with the S key .
- Press the ESC key; a reset routine is performed.



- In the calibration mode, move the table to exactly 620 mm.
- Store the ADC value with the S key and perform a reset routine.
- Following calibration, check the travel range. If positioning errors occur, repeat the adjustment procedure .

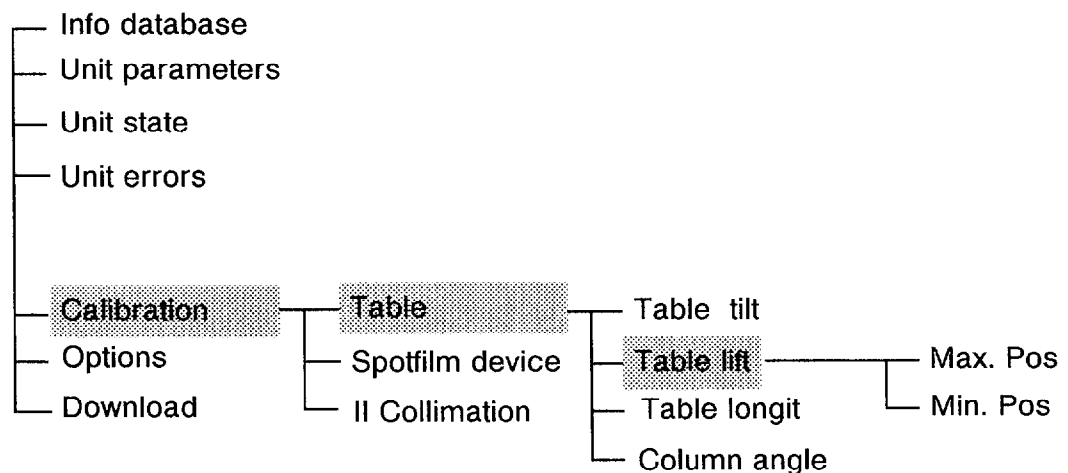
Tilt angle	Software limits for minimum lift (in mm) with different I.I.s.			
	27	27T	33	40
88°	620	620	620	620
0°	650	654	678	740
- 15°	780	780	804	838

UROSOP D systems with measuring marks

Note: After calibration of this function, dimensions have been determined at the factory which permit reproduction even with simple measuring devices (steel tape measure) with adequate accuracy, if required.

- Remove the panelling from the lifting base.
- Bring the table into the + 88° position.
- Connect the service PC to the host D1 in M20.
- Call up the service program.

Main menu



Since the host switches off the collision monitoring in the Calibration mode, confirm the corresponding note with "Y".

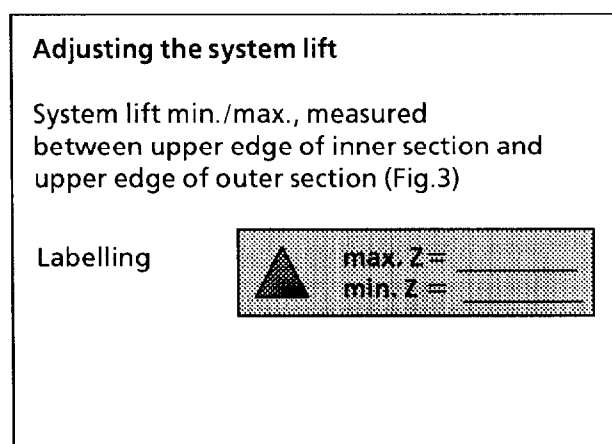


Fig. 2

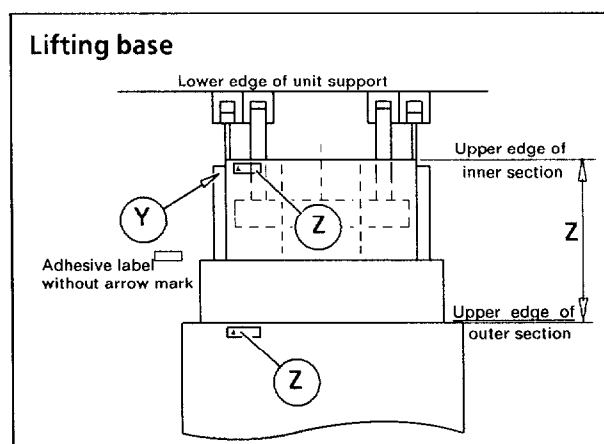


Fig. 3

Maximum position

- Raise the unit in the Calibration mode carefully until the position indicated on the label (2) is reached.
- Using a steel tape measure, determine the distance between the upper edge of the outer lifting base segment and the upper edge of the inner lifting base segment at the position marked with a triangle (Fig. 3).
- Store the ADC value with the "S" key.
- Press the "ESC" key; a reset routine is performed.

Minimum position

- Lower the unit in the Calibration mode carefully until the minimum position indicated on the label (2) is reached.
- Using a steel tape measure, determine the distance between the upper edge of the outer lifting base segment and the upper edge of the inner lifting base segment at the position marked with a triangle (Fig. 3).
- Store the ADC value with the "S" key.
- Press the "ESC" key; a reset routine is performed.

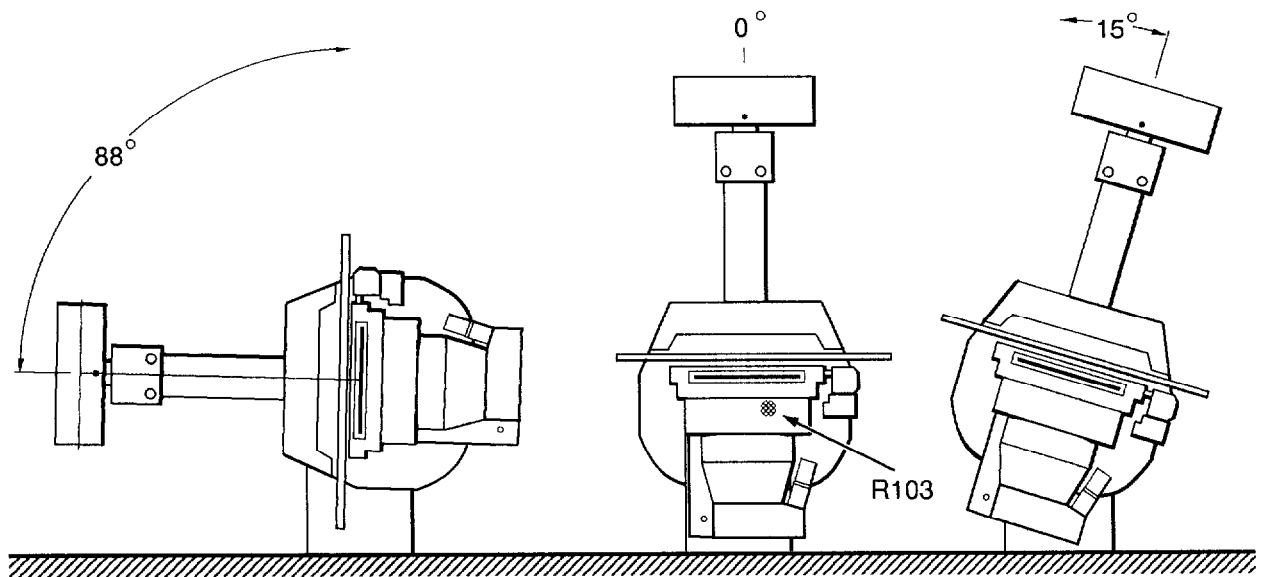


Fig.1

UROSKOP D systems without (and with) measuring marks

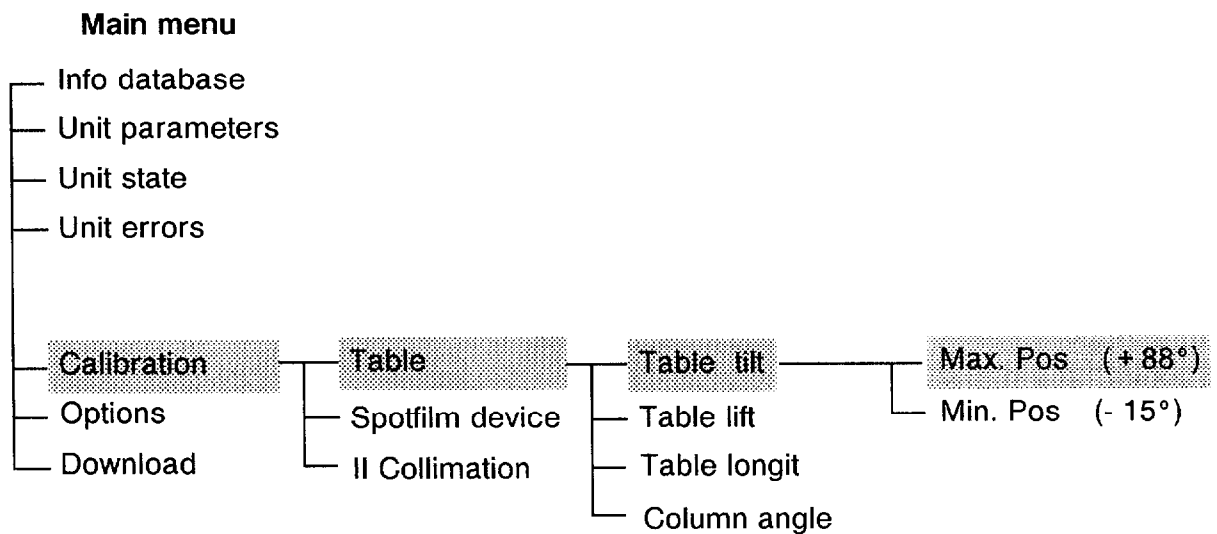
(Adjustment procedure using the angle spirit level)

Dimensions:	lower mechanical stop	- 17°
	lower safety limit switch	- 16°
	lower adjustment position	- 15°
	upper adjustment position	+ 88°
	upper safety limit switch	+ 89°
	upper mechanical stop	+ 91°

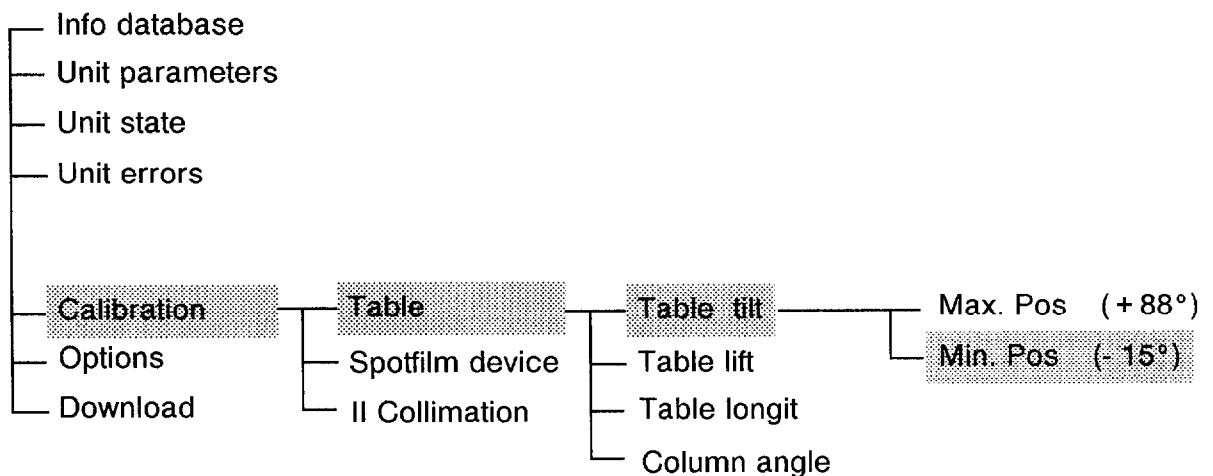
Measure with a precision spirit level at the column.

- The table must be tilted to + 88° because it is only possible to replace the potentiometer R103 in this position.
- System OFF.
- Replace the defective potentiometer R103.
- System ON.
- Set the newly installed potentiometer so that the wiper measures 95% of the potentiometer's operating voltage.
- Perform the calibration program for the maximum and minimum table tilt positions.

+ 88° / - 15°



- In the calibration mode, swivel the unit into the + 88° position.
- Measure the + 88° angle using the angle spirit level on the table rail.
- Store the ADC value with the S key .



- In the calibration mode, swivel the unit into the - 15° position.
- Measure the - 15° angle using the angle spirit level on the table rail.
- Store the ADC value with the S key and perform a reset routine.
- Following calibration, check the travel range. If positioning errors occur, repeat the adjustment procedure.

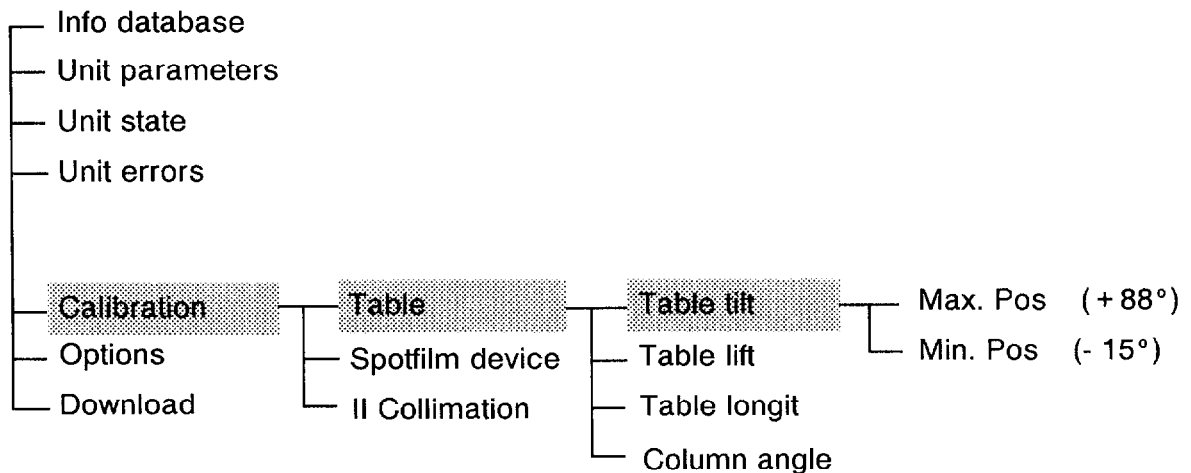
UROSKOP D systems with measuring marks

(Adjustment procedure using the steel tape measure)

Note: *After calibration of this function, dimensions have been determined at the factory which permit reproduction even with simple measuring devices (steel tape measure) with adequate accuracy, if required. Moreover, the calibration is independent of the accuracy of the installation base plate as well.*

- Bring the table to a middle range height.
- Connect the service PC to the host D1 in M20.
- Call up the service program.

Main menu



- Since the host switches off the collision monitoring in the Calibration mode, confirm the corresponding note with "Y".

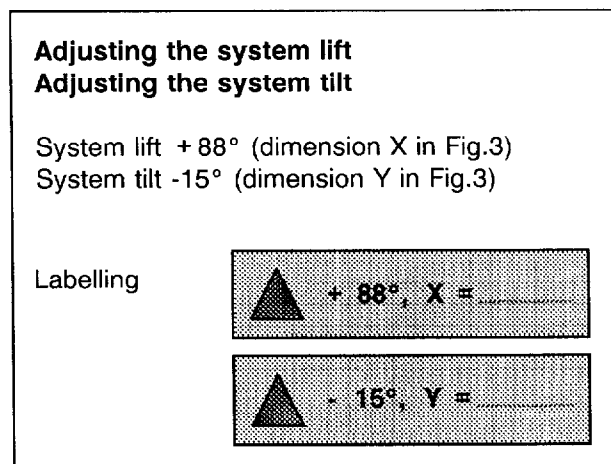


Fig. 2

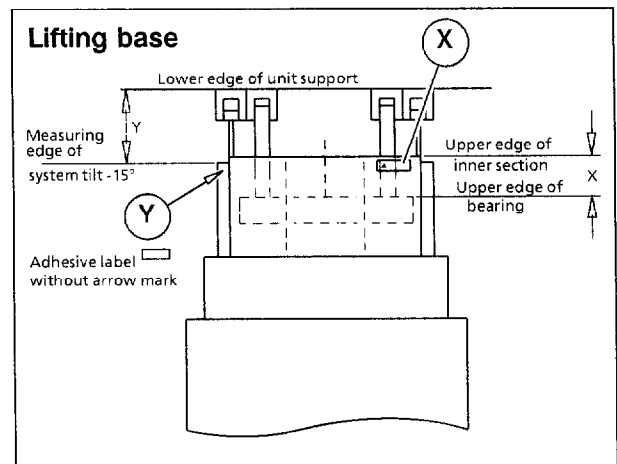


Fig. 3

Maximum position $+88^\circ$

- Carefully tilt up the unit in the Calibration mode until the position indicated on the label (2) is reached.
- Using a steel tape measure, determine the distance between the upper edge of the inner lifting base segment and the adjusted position in the lifting base at the position marked with a triangle (Fig. 3).
- Store the ADC value with the "S" key.
- Press the "ESC" key; a reset routine is performed.

Minimum position -15°

- Carefully tilt down the unit in the Calibration mode until the position indicated on the label (2) is reached.
- Using a steel tape measure, determine the distance between the upper edge of the front ball bearing guide rail and the surface of the unit support (Fig. 3).
- Store the ADC value with the "S" key.
- Press the "ESC" key; a reset routine is performed.
- Check the adjustment by moving through the entire travel range in normal operating mode in both directions; no positioning error may appear.
- In the menu Unit State \rightarrow current, use the F4 key to read the ADC/Host and MC values in different positions. The difference must be clearly less than 75.
- Perform the adjustment procedure once again, if the required dimension is not obtained.

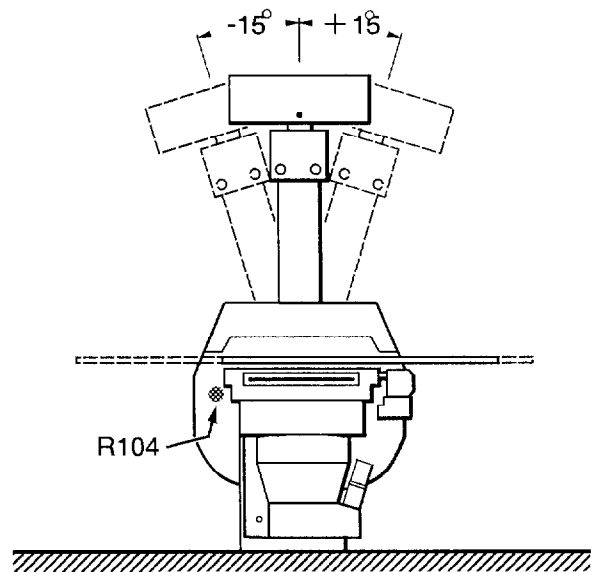


Fig.1

Adjusting the potentiometer on UROSKOP D systems without (and with) measuring marks

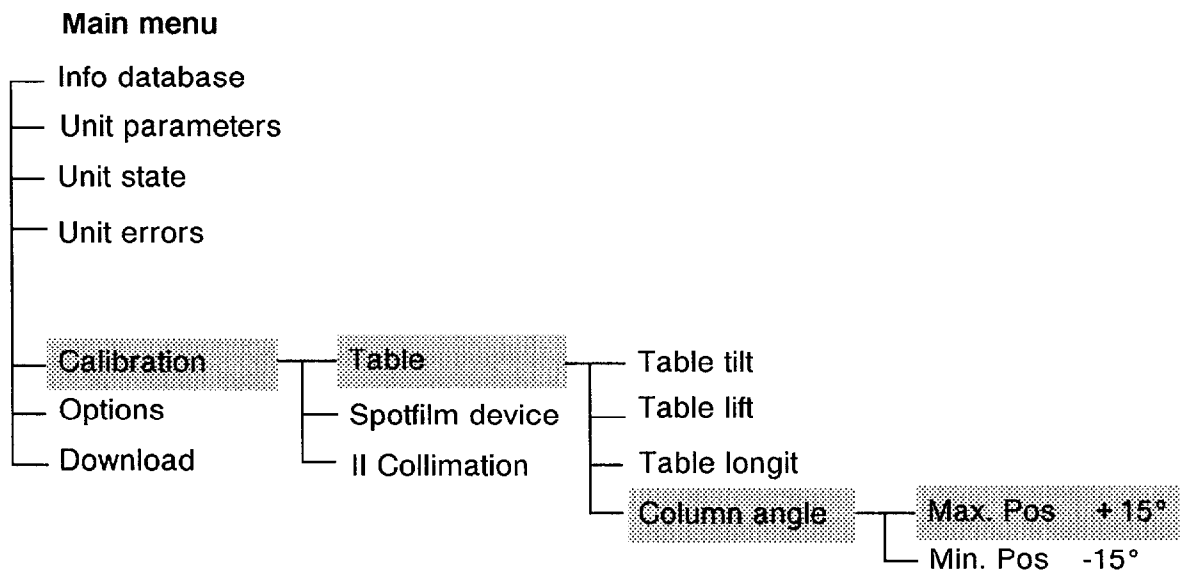
(Adjustment procedure with angle spirit level)

Dimensions:	foot-end mechanical stop	- 17°	
	foot-end safety limit switch	- 16°	
	foot-end adjustment position	- 15°	min. position
	head-end adjustment position	+ 15°	max. position
	head-end safety limit switch	+ 16°	
	head-end mechanical stop	+ 17°	

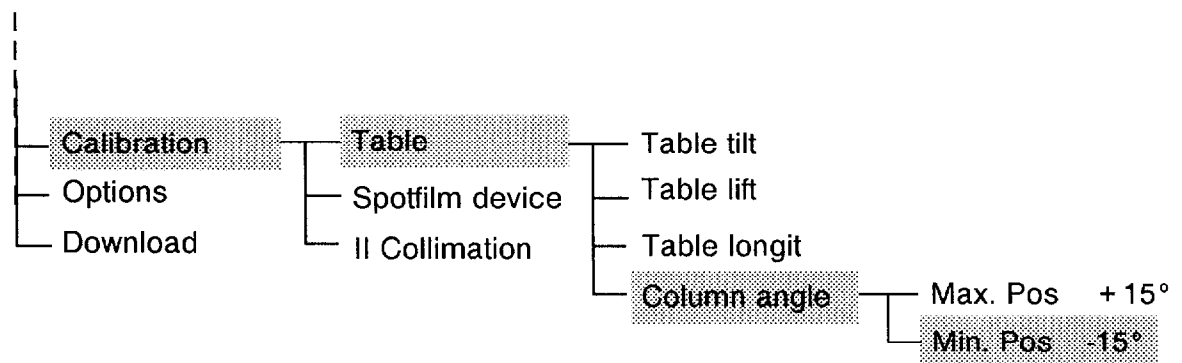
Measure with a spirit level at the column.

- System OFF.
- Position the table horizontally in the calibration program.
- Replace the defective potentiometer R104.
This requires unscrewing the potentiometer with its holding fixture.
- Set the new potentiometer R104 to its middle position (500 Ω).
- System ON.
- Position the column vertically.
- Set the newly installed potentiometer so that the wiper measures 50% of the potentiometer's operating voltage.
- Perform the calibration program for the maximum and minimum column tilt positions.

+ 15° / - 15°



- In the calibration mode, tilt the column to the + 15° position.
- Measure the + 15° angle using the angle spirit level on the column.
- Store the ADC value with the S key.



- In the Calibration mode, tilt the column to the -15° position.
- Measure the -15° angle using the angle spirit level on the column.
- Store the ADC value with the S key and perform a reset routine.
- Following calibration, check the travel range. If positioning errors occur, repeat the adjustment procedure.

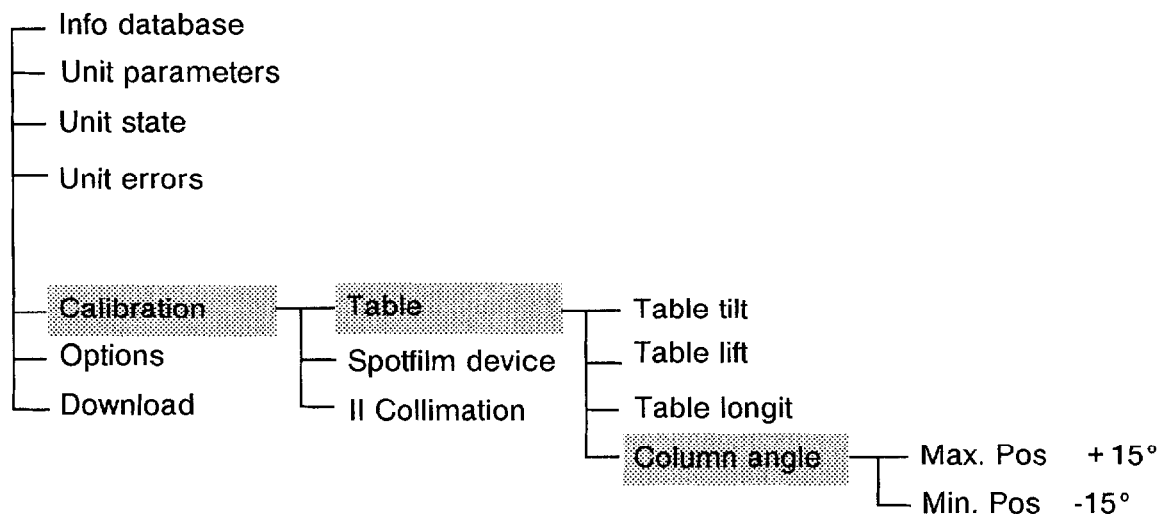
Adjusting the potentiometer on UROSKOP D systems with measuring marks

(Adjustment procedure using the steel tape measure)

Note: *After calibration of this function, dimensions have been determined at the factory which permit reproduction even with simple measuring devices (steel tape measure) with adequate accuracy, if required. Moreover, the calibration is independent of the accuracy of the installation base plate.*

- Bring the table horizontally to a middle range height.
- Connect the service PC to the host D1 in M20.
- Call up the service program.

Main menu



Tube assembly support arm
in oblique position:

- 15° X = (small distance)
swivel direction, head-end

+ 15° X = (large distance)
swivel direction, foot-end

Labelling

-15° X =

+ 15° X =

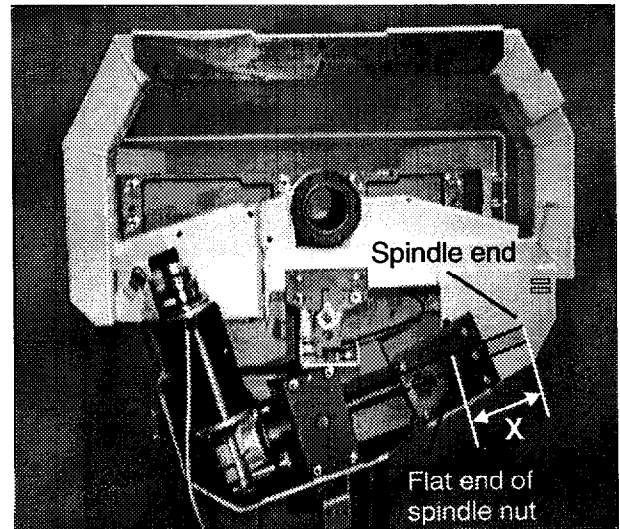


Fig. 2

Fig. 3

Maximum position + 15°

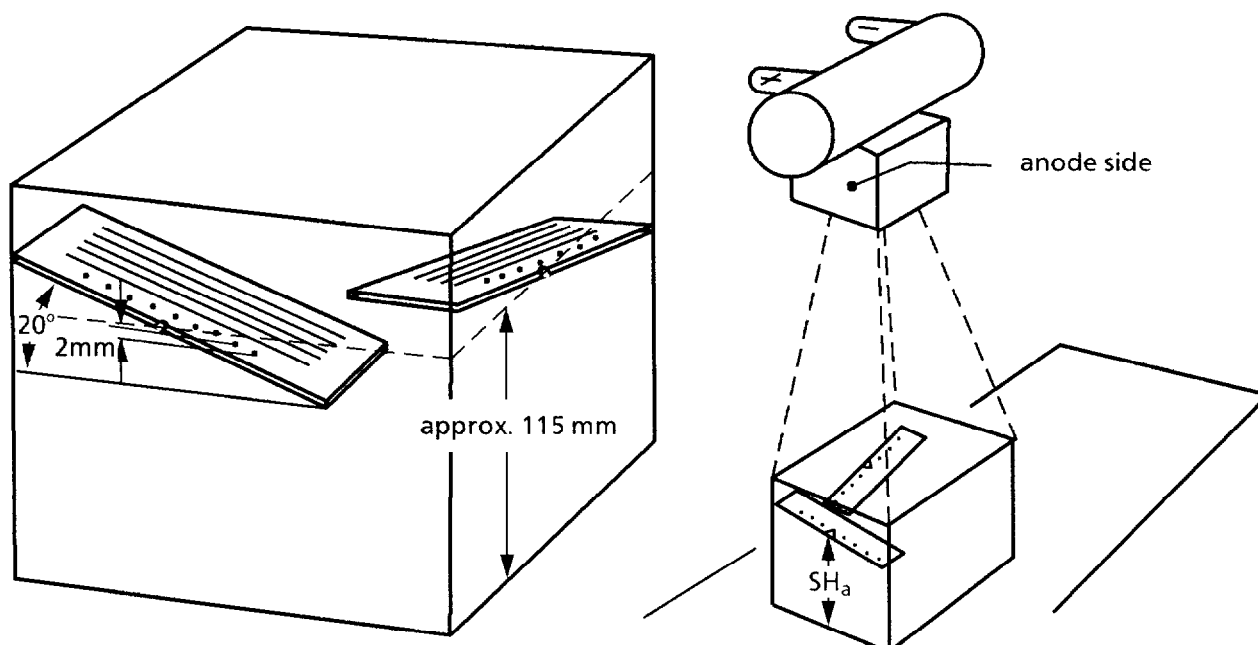
- Carefully swing the tube assembly support arm in the Calibration mode until the value indicated on the label (2) is reached.
- Using a steel tape measure, determine the distance between the upper edge of the spindle nut and the spindle end (Fig. 3).
- Store the ADC value with the "S" key.
- Press the "ESC" key; a reset routine is performed.

Minimum position -15°



- Carefully swing the tube assembly support arm in the Calibration mode until the value indicated on the label (2) is reached.
- Using a steel tape measure, determine the distance between the upper edge of the spindle nut and the spindle end (Fig. 2).
- Store the ADC value with the "S" key.
- Press the "ESC" key; a reset routine is performed.

Setting the tomographic height

Note: The factory setting for the tomographic device is documented on the two test exposures supplied.



Preparing the control exposures

- Move the table into the 0° position and select 20° tomography mode.
- Place HR foam cube with definition tests on the tabletop and align it centrally in relation to the light localizer. One of the two definition tests must be located on the anode side.
- Make sure that the notches of the two definition tests are located exactly at the same height (approx. 11.5 cm) above the tabletop.
- Select the tomographic height so that the tomographic height displayed on the control console corresponds exactly to the measured "notch height" and record this dimension as selected tomographic height "**SH_a**".
- Load an 18 x 24 cm cassette with high-resolution screen with film and insert it into the spotfilm device.
- Collimate the field size somewhat larger than the surface area of the test phantom.
- Select the small focus () and insert a 0.3 mm Cu filter into the collimator.
- Select the tomographic angle indicated in the test certificate for the first exposure. Then select 44 kV and 50 mAs.
-  Release a tomographic exposure and develop the film.
The basic film density should be approx. $D = 1$ to 1.4.

Evaluation

Accuracy of the tomographic height indication

The sharply delineated hole of the definition test is located in the tomographic plane.

If the hole near the notch is delineated sharply, the tomographic height displayed on the control console SH_a coincides with the actual tomographic height SH ; i.e. $\Delta SH_a = 0$.

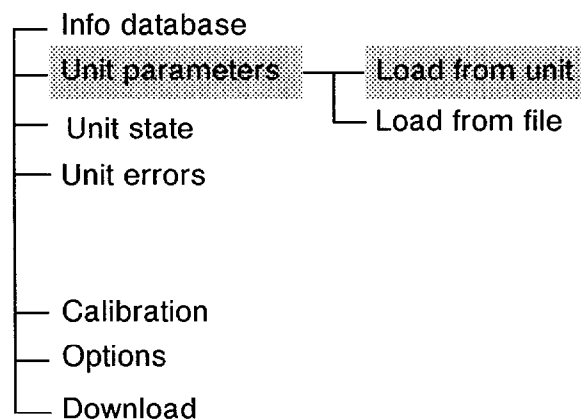
- In the case of deviations, determine the height difference ΔSH_a in mm between the sharply delineated hole and the notch (the height difference from one hole to the other is 0.2 cm).

When the actual tomographic height is located above the notch, then ΔSH_a is positive.

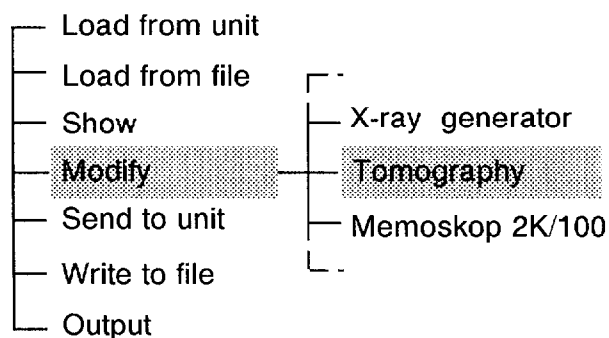
When the actual tomographic height is located below the notch, then ΔSH_a is negative.

- Determine the actual tomographic height, $SH = SH_a + \Delta SH_a$
- Determine the height difference between the tomographic height displayed on the control console and the actual tomographic height. A deviation of ± 3 mm is permissible.
- If the deviation is greater, the film \leftrightarrow tabletop distance (mm) must be changed.

Main menu



Unit parameters





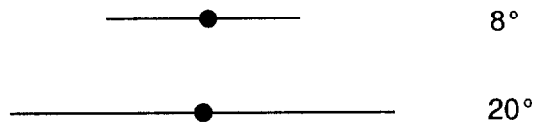
Resolution and tomographic movement

Compare the test exposure taken during start-up at the customer site with the corresponding test exposure taken at the factory:

- Using a magnifying glass (min. 6x magnification), determine and record the max. visible resolution of the test exposures.
The resolution may be at the most one line group worse than the resolution of the Bucky exposure;
the minimum resolution must be ≥ 2 Lp/mm.
- The shape and the course of the tomographic pattern and the evenness of the blurring on the test exposure must be comparable with the supplied factory test exposure.
- Evaluate the test exposures:
 - The blurring shadows of the holes and lines must be parallel over the entire area.
If this is not the case, the film path and focal spot path are not parallel.
 - If the lines appear to be wavy, they can be caused by oscillations in the system.
 - The hole with no blurring shadow lies in the tomographic axis.
- Repeat the test exposure and the setting until the notch and the hole in front of it are sharply delineated.
 - Different film densities of the holes can be caused by grid interferences (can hardly be avoided - uncritical), different dose rates or uneven tomographic movement.

Symmetry of the tomographic pattern

- Bring the column into the vertical position.
- Insert 0.6 mm Cu prefiltering in the collimator.
- Select the small focus .
- Select 2-on-1 image subdivision .
- Set 60 kV and 5.6 mAs.
- Place an aperture diaphragm (Cu plate or 3 mm steel plate with hole of 1 mm \varnothing in the center) into the central beam on the table top.
- ☢ • Release an exposure.
- Remove the cassette and load it again in exactly the same way.
- Set 60 kV and 25 mAs.
- Select the maximum tomographic thickness (199 mm).
- ☢ • Release an exposure with 8° tomographic angle and another one with 20°.



Release one exposure for each tomographic times, 0.8 s/8° and 2 s/20° .

The distances to the left and to the right of the point should be of equal length.

If these distances are of different length, it is possible to change the delay time

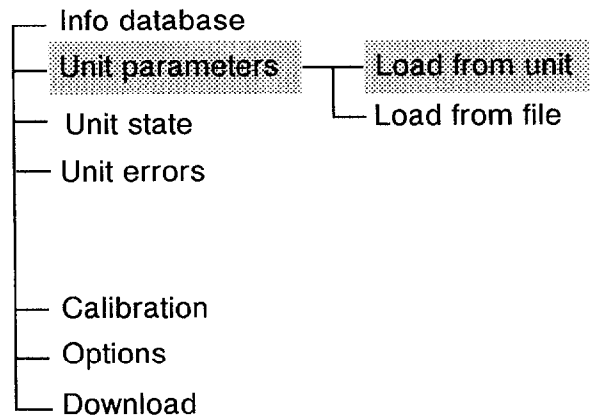
HK on <--> X-ray on.

at 8°:	Δt 50 ms $\hat{=}$ approx. Δs 0.5 mm
at 20°:	Δt 50 ms $\hat{=}$ approx. Δs 2.0 mm

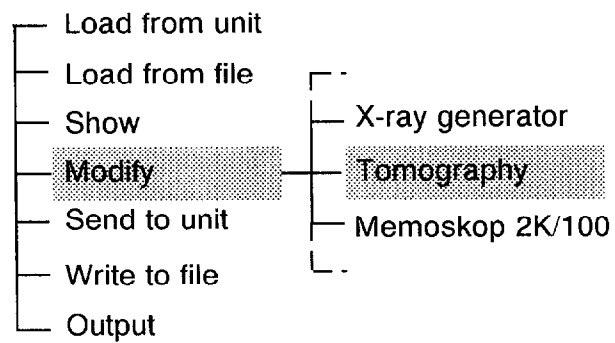
Note: Increasing the value $\hat{=}$ later exposure release.

(for UROSKOP D2/D3 only)

Main menu



Unit parameters



Delay time HK on <--> X-ray on

Tomography 8° [ms]
Tomography 20° [ms]

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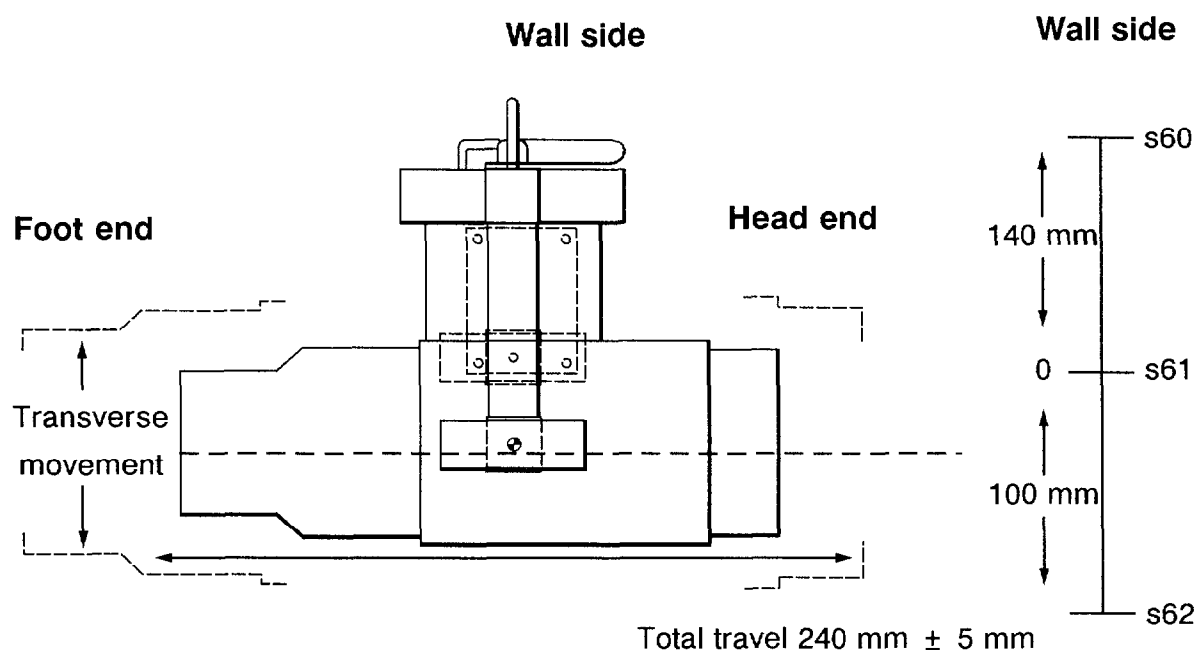


Fig. 1

Setting the switches

Note: Only the effective travel range is measured.

- Move the table into its center position.
- Measure and record the distance between the column rails and the table attachment rails.
- Move the table until switch s62 responds.
- Measure and record the distance between the column rails and the table attachment rails.
- Calculate the distance of travel between the first and second values.
- Move the table until switch s60 responds.
- Measure and record the distance between the column rails and the table attachment rails.
- Calculate the distance of travel between the second and third values.

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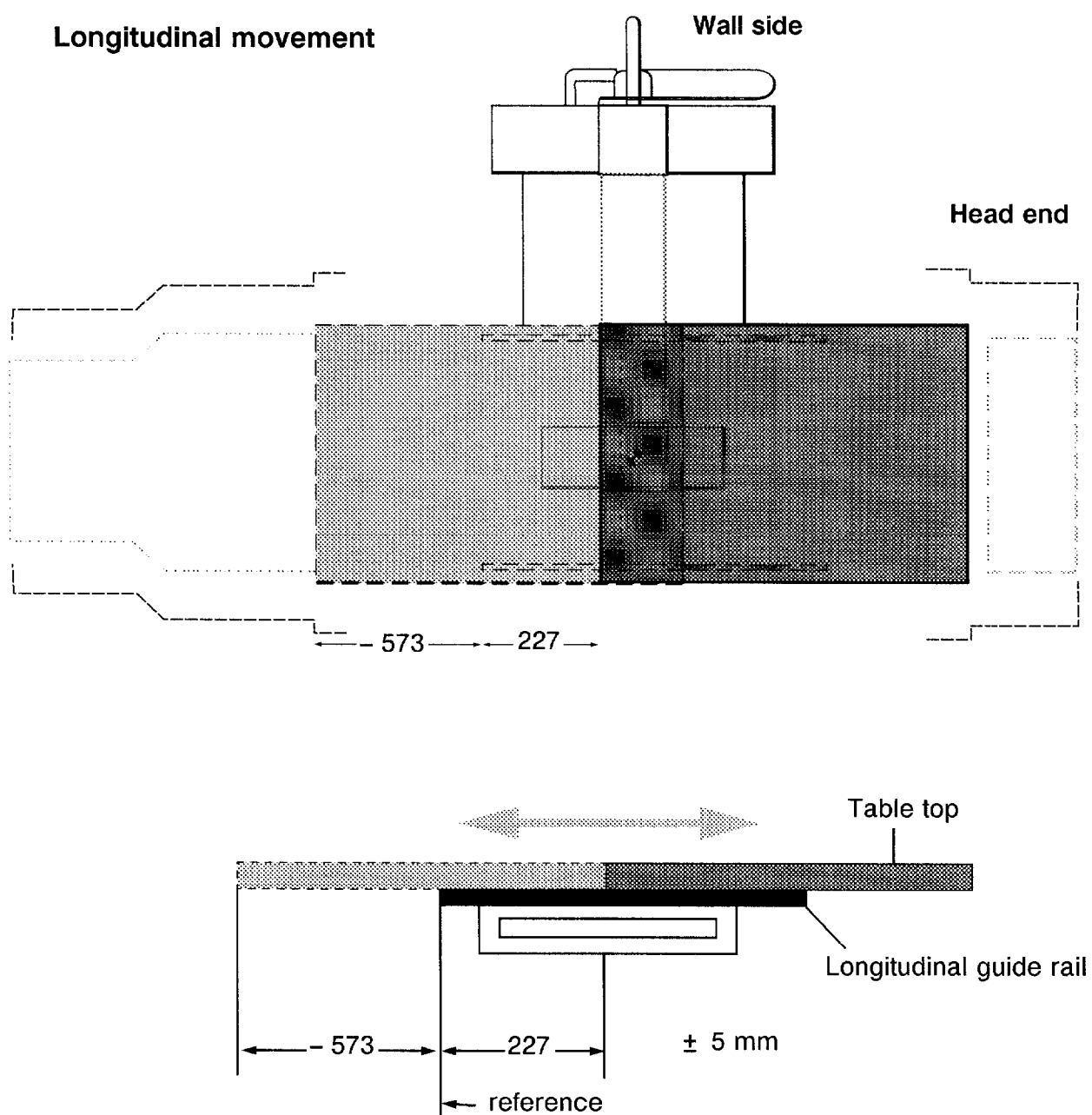


Fig.1

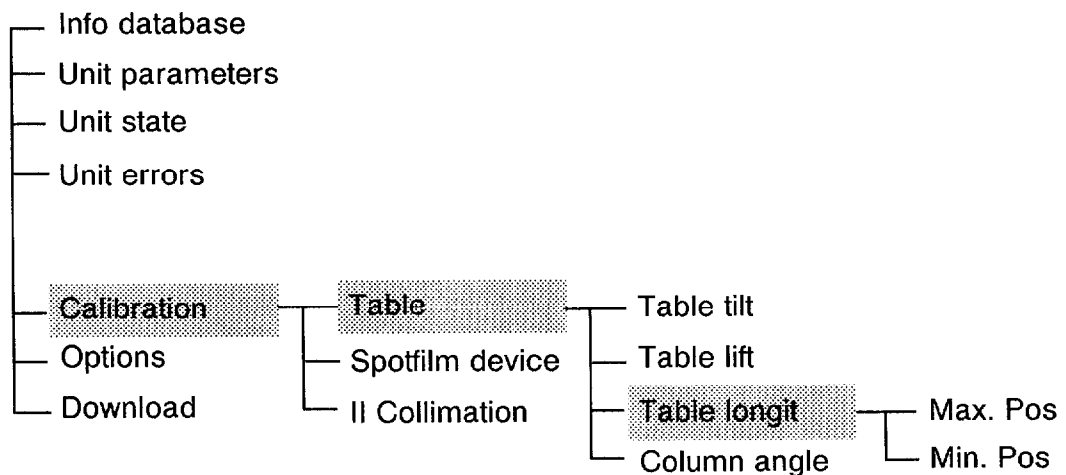
Dimensions:	foot-end safety limit switch	- 583 mm
	foot-end table position	- 573 mm
	head-end table position	+ 227 mm
	head-end safety limit switch	+ 237 mm

The dimensions refer to the distance between the tabletop edges (foot-end) and the longitudinal guide rail (front face, white area).

- Move the table into the center position (– 400 mm).
- System OFF.
- Replace the defective potentiometer.
- Set the new potentiometer to its middle value (500 Ω).
- System ON.
- Set the newly installed potentiometer so that the wiper measures 50% of the potentiometer's operating voltage.
- Perform the calibration program for both the maximum and the minimum table longitudinal position.

– 573 mm / + 227 mm.

Main menu



- Following calibration, check the travel range. If positioning errors occur, repeat the adjustment procedure.

Restricting the outward movement of the tabletop

- Switch the system on.
- Connect the service PC to the host board D1/X10.
- Start the service program.
- Select "Unit State Current" in the service program.
- Move the tabletop into the desired end position; check the position using the tape measure.
- In "Unit State Current": "Table Top lengthwise" read and record the values for
Calculated Position Motorcontroller
AD-Converter value (der)
- Call up "Unit Parameter", "Load from Unit", "Modify".
- Call up the parameter set "Table longit. drive".
- Modify the value of the motor controller
Min table top position (1/10 mm) (footwards) or
Max table top position (1/10 mm) (headwards)
to the MC value read in Unit State previously.
- Modify the value of the AD converter at Min.Pos. (footwards) or AD converter
at Max.Pos. (headwards) to the value read in Unit State Current previously.
- Press Enter and the F4 function key.
- Perform a system reset routine (confirm the queries in the service program
with "Y").
- Check the restricted unit movement.

Note: This procedure applies analogously for all table drives.

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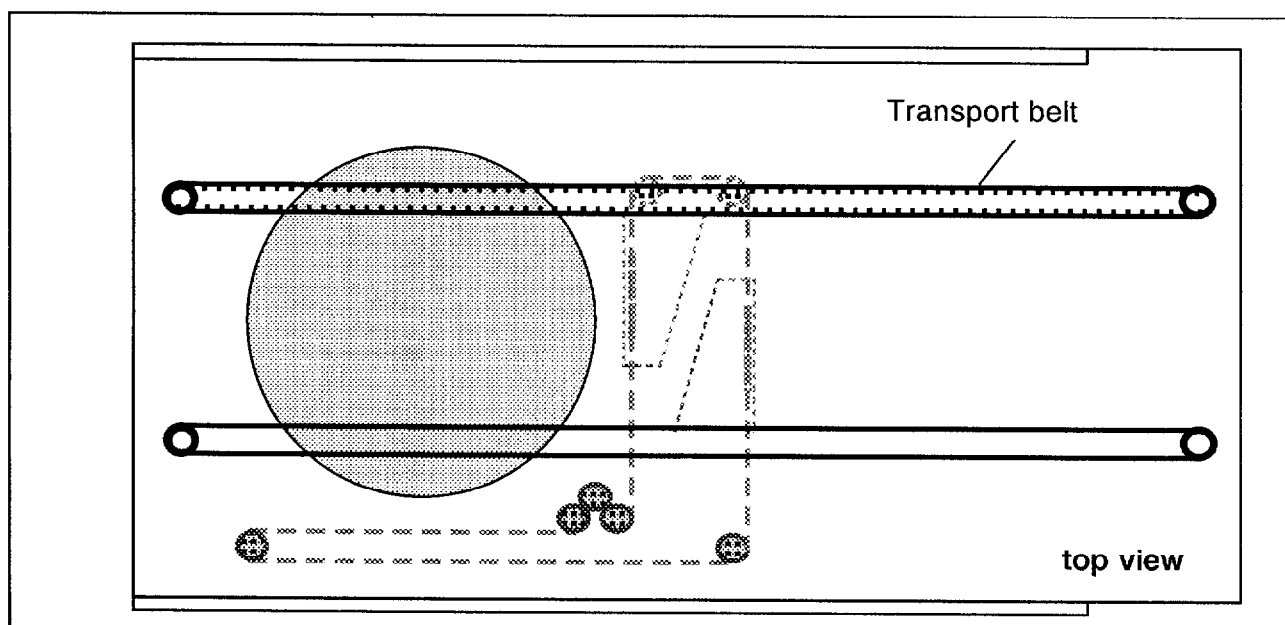


Fig. 1

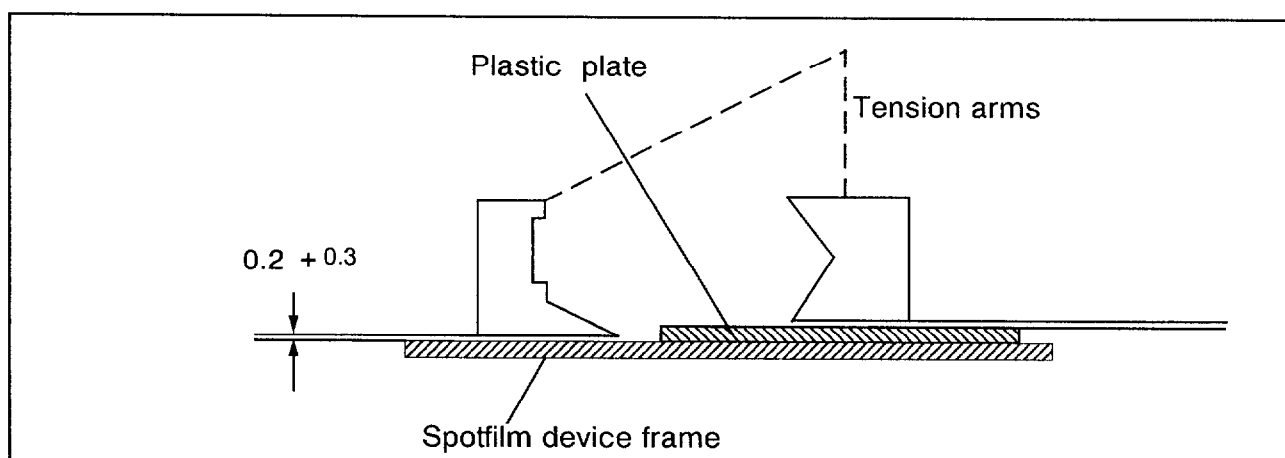
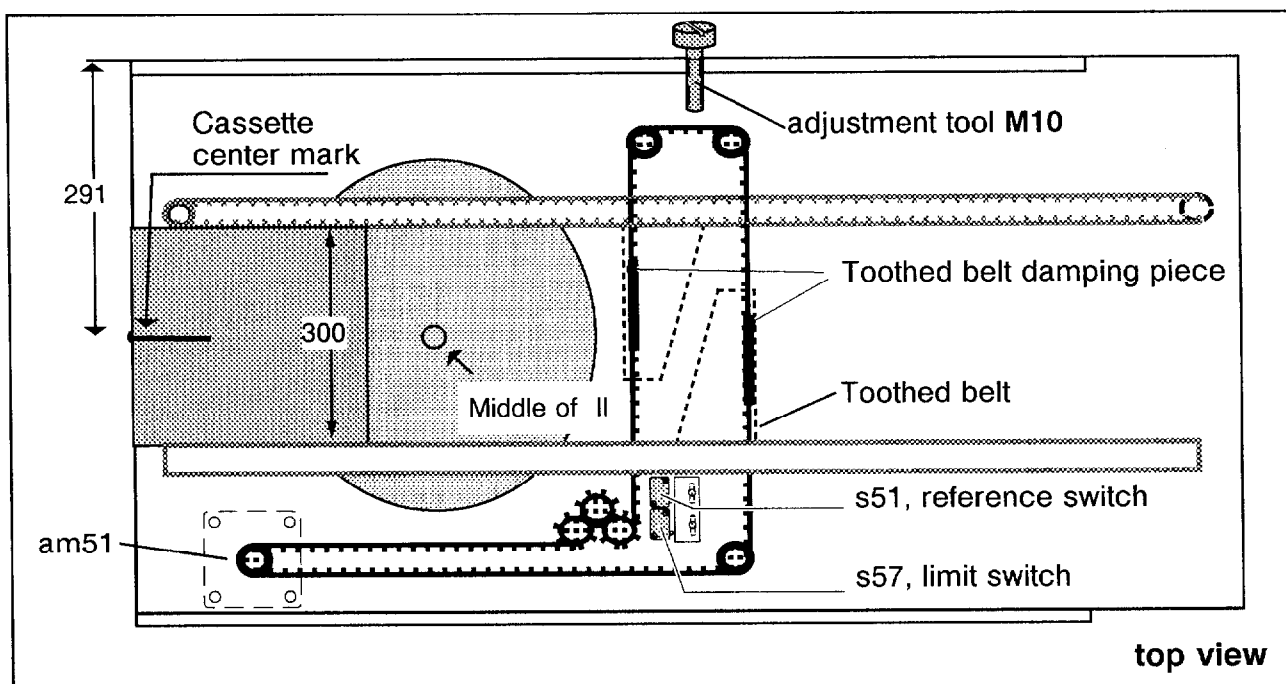


Fig. 2

- Disassemble the spotfilm device in accordance with the Maintenance Instructions, RLL5-310.091.01... , and remove the installation plate for the collimator close to the film (16 screws).
- Remove the old transport belt (Fig. 1).
- Install the new transport belt and tighten with a force of 50N (with 5 mm sag).
- Reinstall the installation plate and the spotfilm device in the reverse order (RLL5-310.091.01...); make sure that the tension arms for the cassette do not rub against the plastic plates of the spotfilm device frame (Fig. 2).

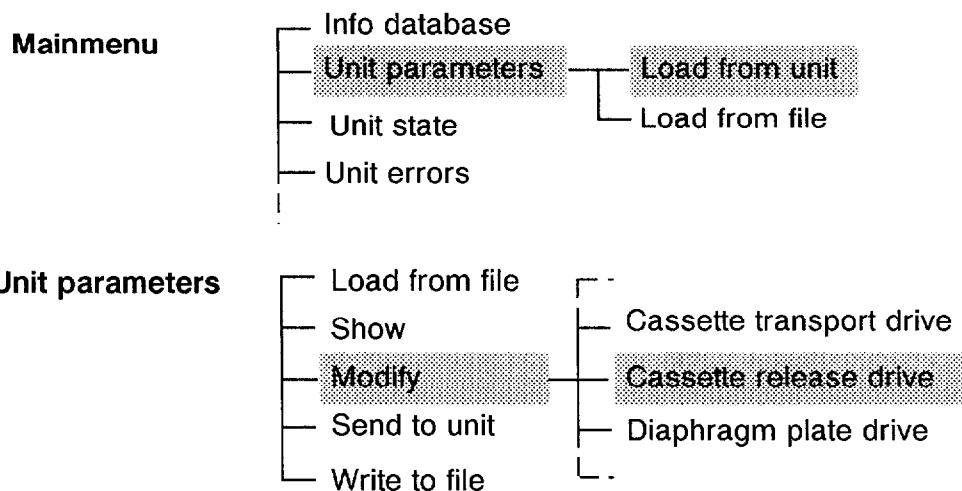
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Adjusting the tension drive belt

- Remove the spotfilm device (see RLL5-310.091.01..)
- Adjust the tension of the toothed belt with drive am51 to 100 N with 5 mm sag.
- Reinstall the spotfilm device (RLL5-310.091.01..), while making sure that the tension arms do not come into contact with the plastic plates of the spotfilm device frame (Fig. 2, Chapter 7).
- Adjust the reference switch s51 after the replacing and adjusting of the tension drive belt

- UROSKOP D and Service PC ☉ .
- Start the service program:



To prevent damage to drive belts if reference switch s51 has not been adjusted properly:

- At **max. opening of transport rails** enter the value **4300**.
- Confirm the input with the Return key.
- At **min. cassette size** enter the value **2500**.
- Confirm the input with the Return key.

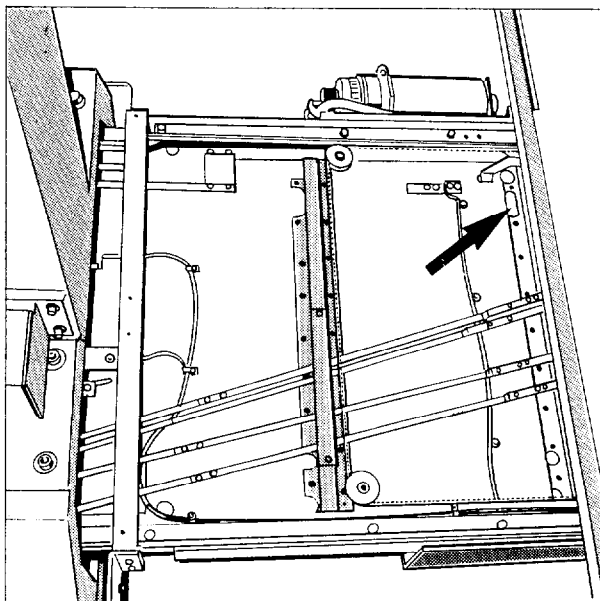
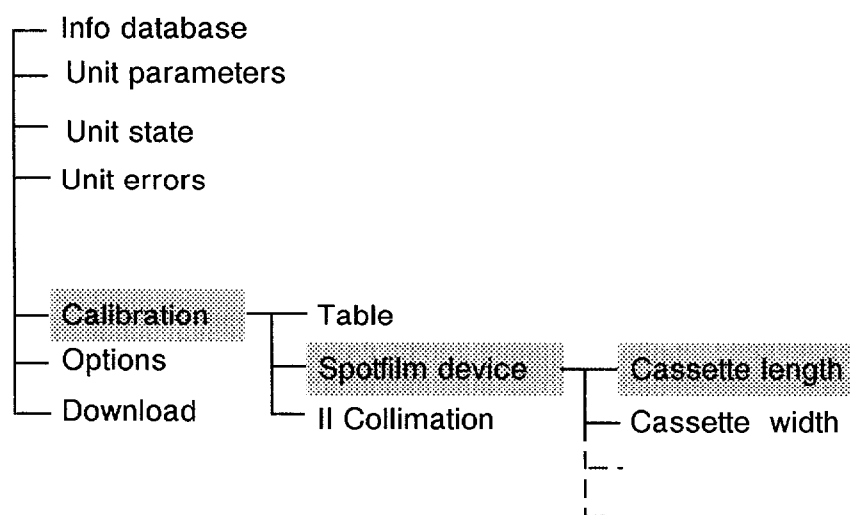


Fig. 2

- UROSKOP D and Service PC OFF.
- Press the clamping jaws against the mechanical stop using a screwdriver passed through the oblong hole (↘/Fig.2) .
- Mark the position of the clamping jaws in the end stop on the plate .
- Press UROSKOP D ON and, as soon as the clamping jaws have reached the center position, the Emergency Stop switch.
- Move the clamping jaws towards the stop again; Limit switch s57 for the clamping jaws must switch audibly approx. 1 mm before the stop.

- If necessary, loosen the switch plate through the elongated hole (↘/Fig.2) and set S27 to 1 mm before the stop. For this purpose, position the clamping jaws in the center as described above.
- UROSKOP D and Service PC OFF.
- Unlock the Emergency Stop Switch.

Main menu

- Measure the exact size of a 30cm cassette with a steel tape measure and insert this 30cm cassette in longitudinal direction into the spotfilm device.
- Enter <Y> (yes) in response to the *Cassette width* query on the Service PC screen.

Cassette length	
Position of the reference switch (1/10 mm):	xxxxx
Calculated length of the cassette (1/10 mm) :	xxxxx
Correct width of the cassette (1/10 mm) :	

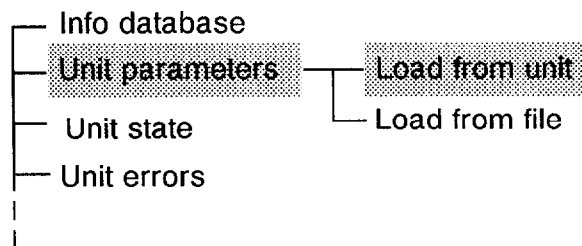
- The value in the line *Calculated length of the cassette* must agree with the measured outer dimension of the cassette.

If this is not the case:

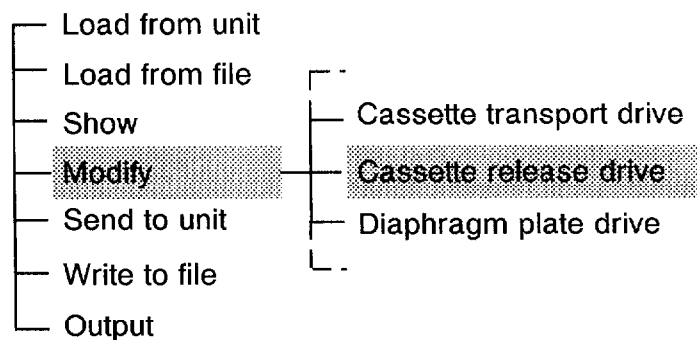
- Enter the measured cassette size in the line *Correct length of the cassette* (1/10 mm).
- Confirm the input with the Return key.
- Eject the cassette and load it again.
- Call the **Cassette length** menu; the measured cassette size must then be displayed with a tolerance of about 0.5 mm in the line *Calculated length of the cassette*.

- Determine the maximum space of both clamping jaws.

Mainmenu



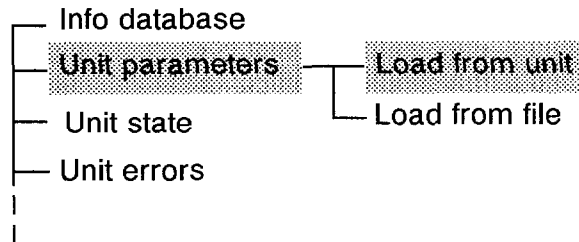
Unit parameters



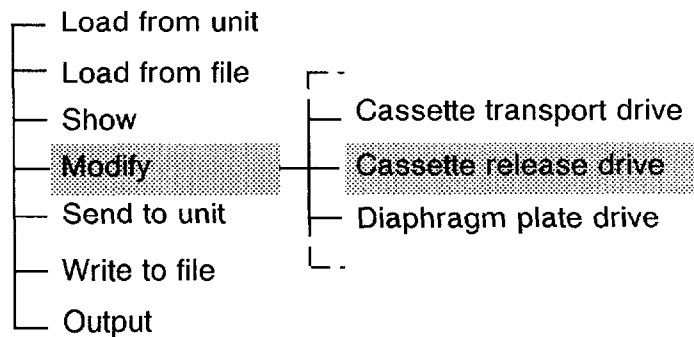
- In **Max. opening of transport rails** gradually increase the values from **4620** (in steps of 5) until the safety switch responds.
- Reduce the value obtained by 20.
- Confirm the input with the Return key.
- Unload and reload a 43 cm cassette several times. In doing so, check if there is play of approx. 3 to 4 mm.
- Start a cassetteless loading procedure and check to see that the clamping jaws do not collide on the safety limit switch in the maximum position.

- Determine the minimum space of both clamping jaws.

Main menu

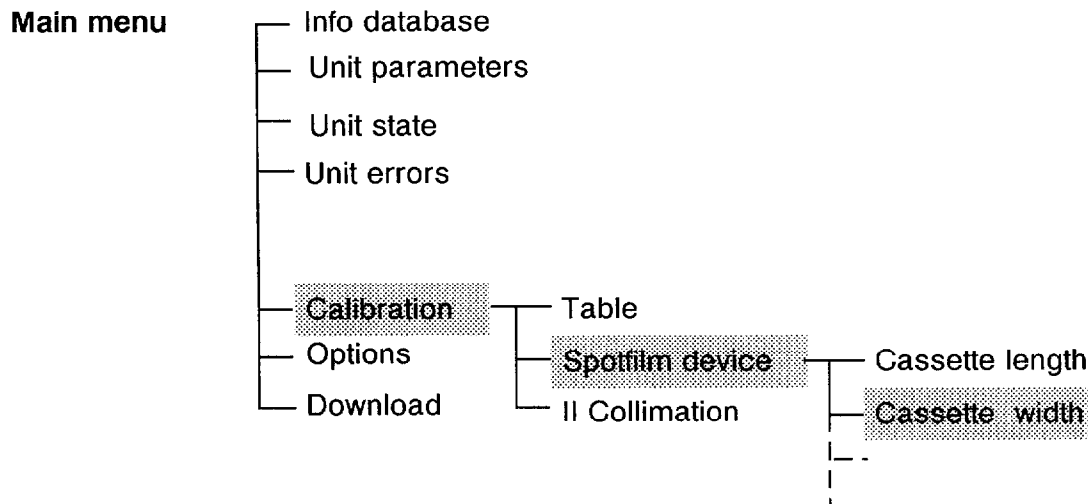


Unit parameters



- In **Min. cassette size** gradually reduce the values from **2050** (in steps of 5) until the clamping jaws start pumping.
- Increase the value obtained by 25 (2.5 mm).
- Confirm the input with the Return key.
- Unload and reload an 18 cm cassette several times and check if it is clamped and transported securely.
- Start a cassetteless loading procedure and check to see that the clamping jaws do not collide on the safety limit switch in the maximum position.

- Adjust the cassette draw in



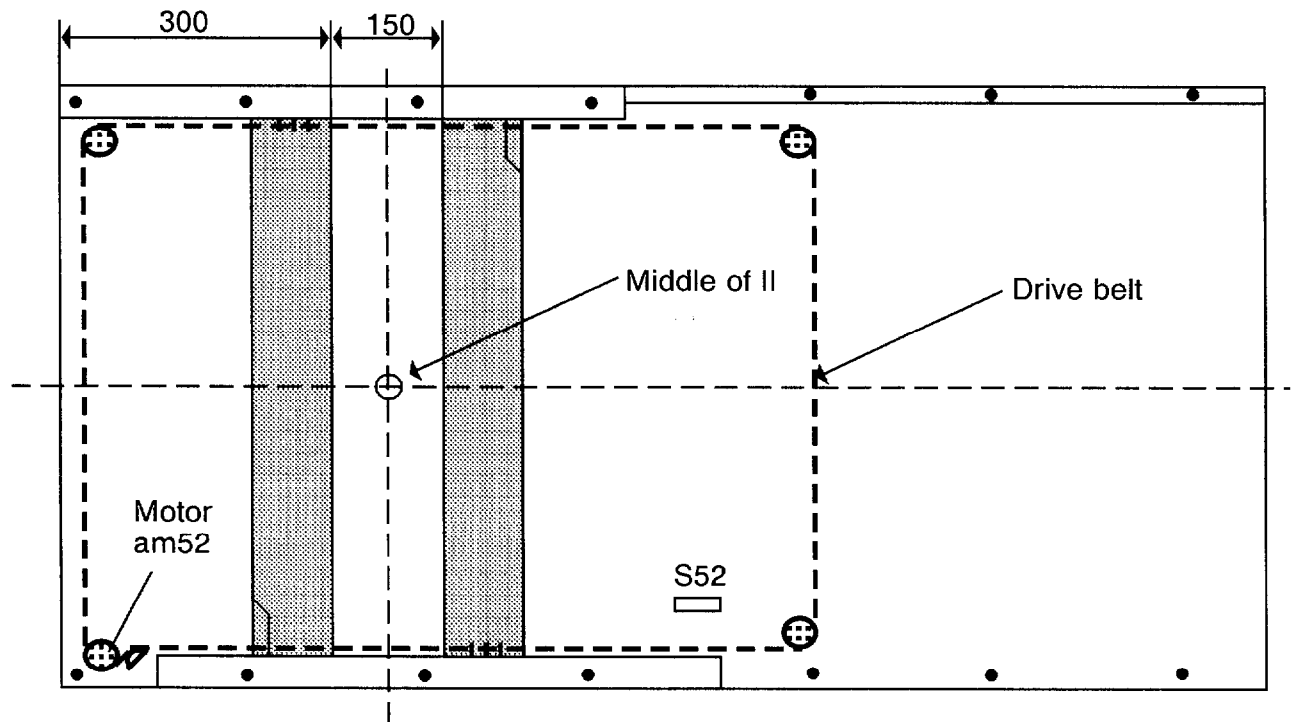
- Measure the exact size of a 30cm cassette with a steel tape measure and insert this 30cm cassette oblong into the spotfilm device.
- Enter <Y> (yes) in response to the *Cassette width* query on the Service PC screen .

Cassette width	
measurement offset (hysteresis 1/10 mm):	xxxxxx
Calculated width of the cassette (1/10 mm) :	xxxxxx
measured width of the cassette (1/10 mm) :	xxxxxx

- The value in the line *Calculated width of the cassette* must agree with the measured outer dimension of the cassette (= light barrier ok).

If this is not the case:

- Enter the measured cassette size in the line *measured width of the cassette*.
- Confirm the input with the Return key.
- Eject the cassette and load it again.
- Call the **Cassette width** menu;
the measured cassette size must then be displayed in the line *Calculated width of the cassette* with a tolerance of about 0.5 mm.



- Remove the panelling from the spotfilm device.
- Remove the defective drive belt.
- Install the new drive belt and connect to the front diaphragm plate.
- Set a distance of 150 ± 0.5 mm between the two diaphragm plates and fasten the rear diaphragm plate to the new drive belt.
- Set a distance of 300 ± 0.5 mm between the front diaphragm plate and the front edge of the spotfilm device, and fasten.
- Connect the belt ends.
- Adjust reference switch S52 for the diaphragm plates so that the switch responds at a maximum opening of 360 ± 0.5 mm.
- Perform a functional check.

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Supporting arm exposure position

The exact positioning of the tube above the middle of the film is a necessary condition for satisfactory radiation geometry. This position (= exposure position) of the tube depends on the mechanical lock-in position of the tube supporting arm.

In order to prevent exposures from other positions, switch s10 must respond no earlier than 5 mm before the lock-in position of the tube assembly supporting arm.

- Move the tube supporting arm slowly towards the exposure position until the exposure position lamp at the control console remains lit.
- Mark the position of the tube supporting arm.
- Let the tube supporting arm lock into the exposure position.
- Determine the difference from the previous position: The reference value is < 5 mm.
- Eliminate larger deviations as necessary by shifting the position of switch s10.

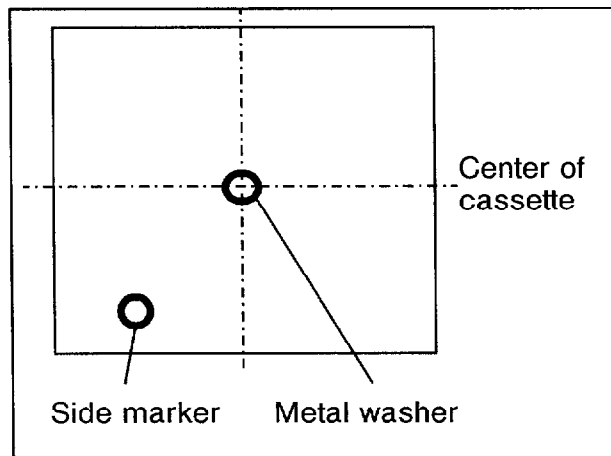


Fig. 1

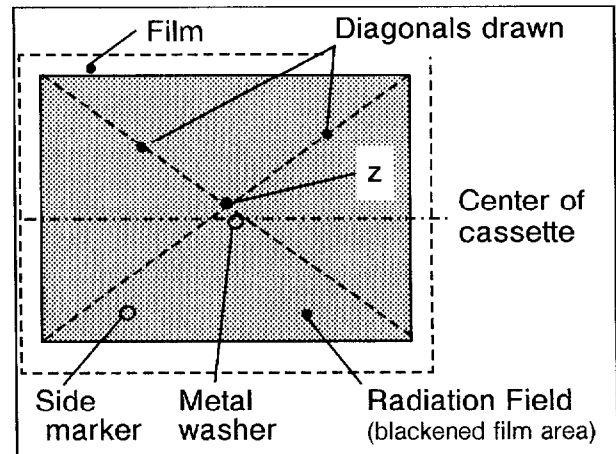


Fig. 2


Coincidence of the radiation field and film centers

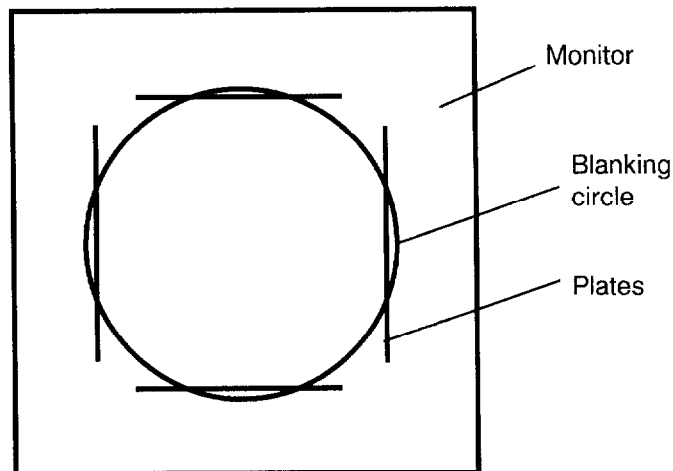
Note: The factory setting of the central ray is documented in the test certificate, found in the UROSKOP D logbook, RLL5-310.066..

- Affix a metal washer to the center of a cassette (24 cm x 30 cm or 10" x 12") (Fig. 1).
- Affix a second metal washer to the cassette as a side mark (Fig. 1).
- Insert this cassette sideways, loaded with a film.
- Collimate the radiation field smaller than the cassette format.
- Set exposure parameters: approx. 40 kV, and 5 mAs
large focus ■, (with universal screen).
- Take one exposure with the table in the +88° and -15° position (Trendelenburg) in each case.
- Develop the film.
- Draw the radiation field center of the two exposures onto the developed film (Fig.2).
- Measure the deviation (z/ Fig. 2) between the middle of the radiation field (washer) and the center mark on the two exposures (Z1, Z2).
- Compare the deviations Z1, Z2 found with the test exposures from the factory. The deviations may not differ from the values determined at the factory by more than 2 mm.
Max. permissible deviations with OPTILIX tube unit ≤ 1.2 cm
- If necessary:
 - Swivel the tube assembly in its supporting rings in the transverse direction of the tabletop.
 - Loosen the four fastening screws of the tube assembly support, rotate the tube assembly into the tabletop longitudinal direction and retighten the four fastening screws.

Accuracy of the positive beam limitation (PBL)

Note: The factory-set values for the PBL are documented in the test certificate and by three exposures supplied. Make a control exposure to ensure that these settings have not changed during transport and installation. Enter these values in the test certificate under "Accuracy of the PBL for cassette formats".

- Move the unit into the 0° position.
- Select normal-format.
- ◀◀ • Insert a 24 cm x 18 cm (10" x 8") cassette without film and record the film format.
- Press the light localizer button  until the PBL collimates to the 24cm x 18cm format and the LED in the button lights up.
- Remove the 24 cm x 18 cm (10" x 8") cassette.
- Insert 30 cm x 24 cm (12" x 10") cassette with film, while observing the collimator plates. The settings must not readjust.
- ☢ • Release an exposure with large focus ■ (exposure parameters: approx. 40 kV and 5 mAs with universal screen).
- Develop the film.
- ◀◀ • Measure the width and length of the radiation field on the exposure and enter the values in the test certificate (column Radiation field in film plane).
- Compare the radiation field size with the factory-set values in the test certificate (column Radiation field in film plane).
- A maximum overframing of the film format of 1.4 cm is allowed on each side with OPTILIX tube assemblies.
- For Urooskop D3 systems with 50 Hz Fluorospot H, see Start-up information RX0-000.038.02...



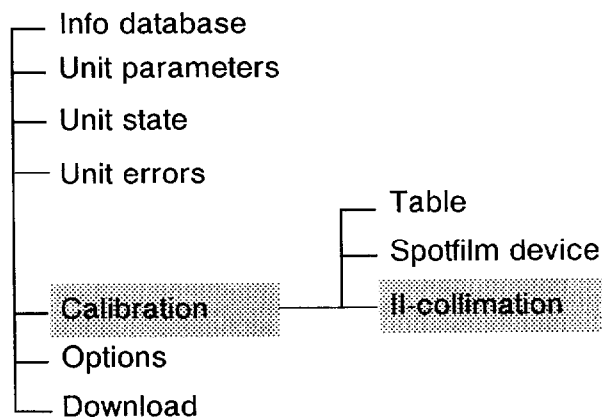
Fluoro field limitation

The centering of the TV camera and the fluoro field limitation are set at the factory.



- Select I.I. full format.
- Fluoro ON.
Open the collimator plates to their maximum opening and check whether the collimator plates are just still imaged centrically at the edge of the monitor image (blanking circle).
- Check the collimator plates in the same way for all other formats.
The adjustment is correct when the collimator plates are just still imaged centrically at the edge of the monitor image.
- In case of deviation, correct by means of the service software.

Main menu



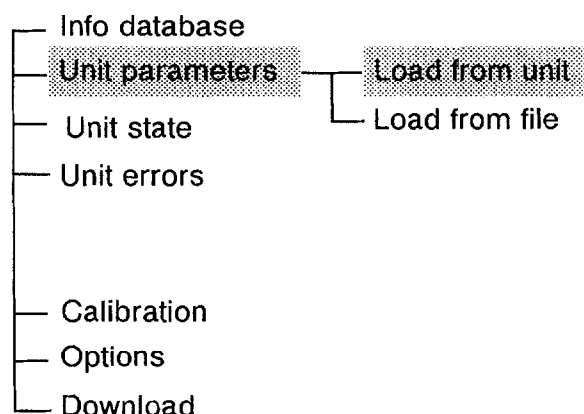
- Change the following formats in the "II Collimation" menu.
- Enter all values into the test certificate RLL5-310.037.03...
- For UROSKOP D3 systems with 50 Hz Fluorospot H, see Start-up information RX0-000.038.02...

Disabling spotfilm device operation

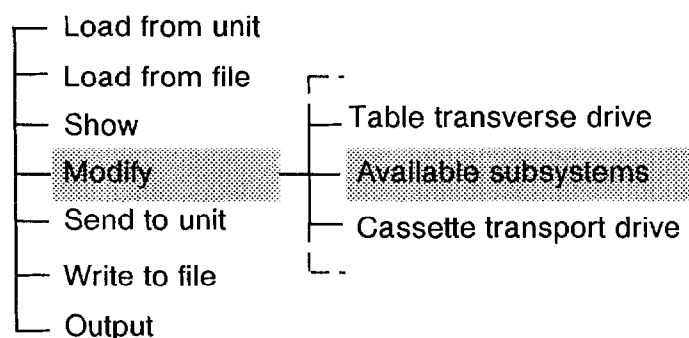
Note: In order to insert the dose measurement chamber into the spotfilm device for the following tasks, it is necessary to change the configuration of the UROSKOP. After completion of these tasks, restore the original configuration.

- Connect the Service PC to the UROSKOP D control cabinet, board D1, plug X10.
- Service PC ON.
- UROSKOP D ON.
- Start the service program.

Main menu



Unit parameters



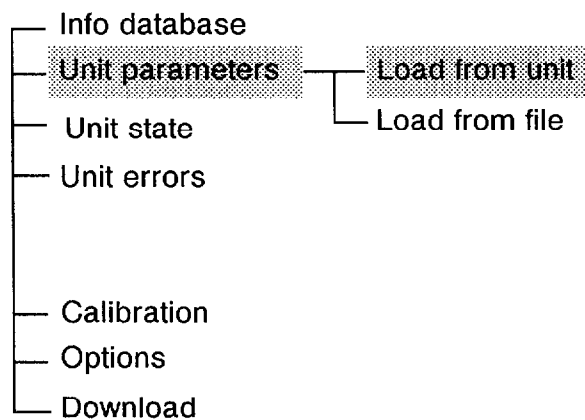
- For **Spotfilm device (SF device control. D7)** enter the value 00.
- Confirm the input with the Return key.
- Press <F4>. Reply to both confirmation queries with the Y key.
- End the service program again.

Enabling spotfilm device operation again

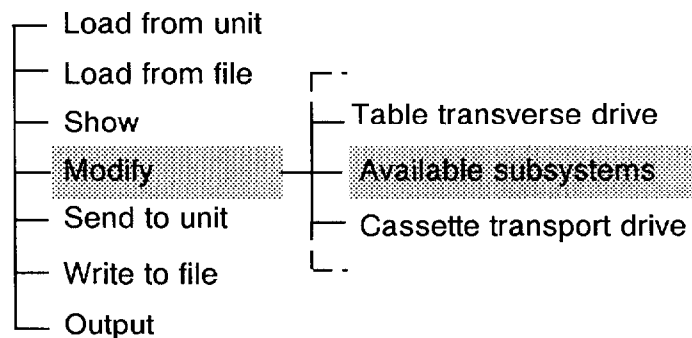
Note: After completing the tasks above, enable the spotfilm device again.

- Connect the Service PC to the UROSKOP D control cabinet, board D1, plug X10.
- Service PC ON.
- UROSKOP D ON.
- Start the service program.

Main menu




Unit parameters



- For Spotfilm device (SF device control. D7) enter the value FF.
- Confirm the input with the Return key.
- Press <F4>. Reply to both confirmation queries with the Y key.
- End the service program with <F10>.
- For the query "Input Jobs worked on" input ("Dose rate adjustment").

System-specific notes

The UROSKOP D1/PLSU system is equipped with the VIDOMATIK PE and the SIRECON Compact II-TV system. The fluoro characteristic follows the antiisowatt curve.

- The SIRECON Compact system has no TV iris diaphragm control. In the J00 configuration module of the generator, it is therefore necessary to program the same dose rate value (factory-set to 260 nGy/s) for Auto mode 1 and Auto mode 2.
- The SIRECON Compact system has been factory-set to a dose rate of 260 nGy/s. The pinhole diaphragm is installed in accordance with a B signal (without dark current component) of **27 mV to 36 mV** at TP M95/D15/C1 (+).
- Carry out the dose rate setting and the pinhole diaphragm selection according to Chapter 13 of these instructions.
- For adjusting the brightness and contrast of the UROSKOP D1 with the  key, four different characteristics (LUTs) can be selected. These are generated in the MEMOSKOP 2K. The input signal (BAS signal) for the memory is adapted to these LUTs (6dB attenuation between the SIRECON Compact and the MEMOSKOP 2).

Dose rate and aperture diaphragm size on SIRECON Compact

Notes:

Since the B signal is used for the dose rate control, following repairs or changes to the SIRECON Compact it is necessary to set the dose rate again.

The camera has been factory-set to a dose rate of 260 nGy/s (30 μ R/s). The aperture diaphragm is installed in accordance with a B signal of 27 mV to 36 mV (without dark current component) at TP M95/D15/C1 (+).

If the customer wishes another dose rate value setting, it is necessary to adapt the aperture diaphragm before the fluoro adjustment in order to provide the required B signal of 27 mV to 36 mV at TP M95/D15/C1 (+) with the new dose rate value. See page 13-4, "Determining the aperture diaphragm".

The fluoro characteristic curve follows the antiisowatt curve. The SIRECON Compact has no TV iris diaphragm control, so that dose-saving zoom is not possible. In the J00 configuration module, it is therefore necessary to program the same dose rate value (factory-set to 260 nGy/s) for Auto mode 1 and Auto mode 2.

In order to insert the dose measurement chamber into the spotfilm device, see "Disabling the spotfilm device" on page 11-1 of these instructions. Following the adjustment, enable the spotfilm device again: see page 11-2.

Checking the SIRECON Compact operating voltages (measure only in case of faulty operation)

D13 (G5181) + 28 V (mini power pack)	TP " + 28V"	DVM to D13, TP "28 V", 0V at TP "0V" Voltage value: + 27 V to + 29 V (not adjustable)
D14/M95 + 15 V (ADR)	TP " + 15V" D2/R6	DVM to D14, TP " + 15 V", 0V at TP "0V" Voltage value: + 14.8 V to + 15.2 V
- 15 V (ADR)	TP " - 15 V" D2/R15	DVM to D14, TP " - 15 V", 0V at TP "0V" Voltage value: - 14.8 V to - 15.2 V
- 5 V (ADR)	TP " - 5 V"	DVM to D14, TP " - 5 V", 0V at TP "0V" Voltage value: - 4.8 V to - 5.2 V (not adjustable)
D5 / camera - 6.5 V (camera)	TP " - 6,5 V" D11/R15	DVM to TP " - 6.5 V", 0V at TP "0V" Voltage value: - 6.4 V bis - 6.6 V
18 V (camera)	TP "18 V" D11/R5	DVM to TP "18 V", 0V at TP "0V" Voltage value: + 17.7 V to + 18.3 V
Zero balance	D15/TP4, TP E D15/R38	DVM to D15/TP 4. 0V at TP E Voltage value: 0V \pm 0.2 V

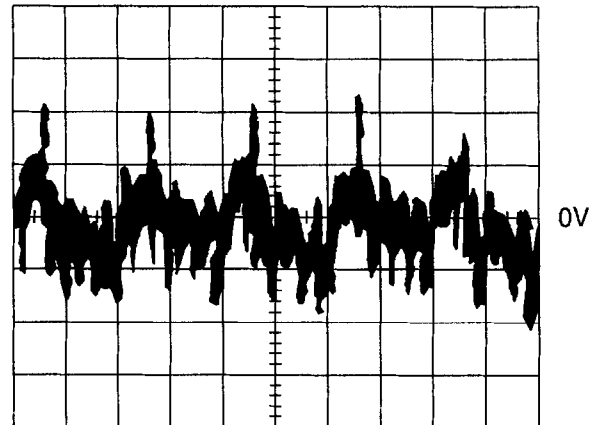


Fig. 1

Checking the IONTOMAT

Preliminary tasks

- Plug service board D850 into N11.
- System ON.
- The generator must be switched on for about 5 minutes prior to the measurement.
- At N11 frame SS OFF.
- Connect an oscilloscope to N11/D901/X2.7, 0V at D901/X2.1.

Checking the drift

- Fluoro ON (at the unit).
- The drift must not exceed ± 50 mV/ minute.
- Fluoro OFF.

Checking the ripple voltage (see Fig. 1)

- Leave the oscilloscope connected to N11/D901/X2.7, 0V on D901/X2.1.
- Fluoro ON (at the unit).
- The ripple voltage (Fig. 1) must not exceed 50 mV.
- Fluoro OFF.
- SS again ON .

Determining the aperture diaphragm

Note: *Since the B signal is used for the dose rate control, following repairs or changes to the SIRECON Compact or replacing the aperture diaphragm it is necessary to set the dose rate again. The aperture diaphragm must be determined with the dose rate desired (to be programmed) (factory-set to 260 nGy/s).*

Programming the dose rate setting

- System OFF.
- Connect an oscilloscope to M95, D15, test point C1 (+).
- Attach 1.2 mm Cu to the collimator.
- Disable the spotfilm device (see page 11-1).
- Insert the dose measurement chamber into the spotfilm device centrally in relation to the I.I.input.
- Connect the dose measurement chamber to the dose rate measuring device.
- At the generator, plug service board D850 into the slot provided.
- System ON and wait for the system to boot.
- At M95, set service switch s1 to position 1 (B signal ON).
- On board D850, fluoro ON.
- Set 70 kV on board D850 with the (+) and (–) keys.
- On board D850, reset switch **S6** to mA setting.
- Using the (+) and (–) keys, increase the fluoro current until the dose rate measuring device indicates the desired dose rate (factory-set to 260 nGy/s).
- Fluoro OFF.



Determining the aperture diaphragm



- Fluoro ON
(service switch S1 on M95 still in position 1).
- Read the corresponding B signal from the oscilloscope.
The B signal should be between 27 mV and 36 mV, preferably close to 36 mV (signal-to-noise ratio).
- At the generator, service board D850 fluoro again OFF.
- Set service switch s1 on M95 back to position 2.
- If the B signal deviates from the values above, replace the aperture diaphragm.
 - This requires removing the two fuses U1 and U2 on M95.
 - Remove the camera from the elbow.

When the B signal is too large

- Replace the aperture diaphragm before the camera lens with a aperture diaphragm of smaller aperture (higher number value).

When the B signal is too small

- Replace the aperture diaphragm before the camera lens with a aperture diaphragm of larger aperture (lower number value).
- Reattach the camera to the elbow.
- Put back the two fuses U1 and U2.
- Wait about 30 seconds, until the camera is ready again.
- On M95, set service switch s1 to position 1.



- Fluoro ON.
- Measure the B signal again.
- Fluoro OFF.
- Set service switch s1 back to position 2.
- Repeat the adjustment procedure, if necessary.

Programming the POLYDOROS 50S/80S

- Plug board D851 (from the generator accessory pack) into control frame N11 on board 811.
- Connect the pocket terminal to board D851.

Defining the dose rate unit

- Select adjustment number "14" on the pocket terminal.
- The programming is carried out in option 13, whether the dose rate is given in nGy/S or in $\mu\text{R/s}$.

Programming the VIDOMATIK PE

- Select adjustment number "00" on the pocket terminal and program according to Start-up instructions R67-010.034.05 for the generator.
- Select adjustment number "01" (IONTOMAT) on the pocket terminal and program according to Start-up instructions R67-010.034.05 for the generator. You must also program the evaluation of the "TV B SIGNAL" at the appropriate connection point for the B signal.
- Select adjustment number "08" (Antiisowatt) on the pocket terminal. Take account of the local regulations for maximum skin dose rate (USA: 9R/min = 78.3 mGy/min = 1305 nGy/s).

Correction factors for the dose rate setting

Note: *Insert the dose measurement chamber into the spotfilm device, centrally in relation to the I.I.. No correction factors are then needed. Disable the spotfilm device (see page 11-1, Disabling spotfilm device operation).*

Preliminary tasks

- Select the I.I. full format.
- Disable the spotfilm device as described on page 11-1.
- Insert the dose measurement chamber into the spotfilm device, centrally in relation to the I.I. input.
- Attach 1.2 mm Cu to the collimator.

Setting the dose rate

- Select adjustment number "10" (FC-DOSE RATE ADJUST) on the pocket terminal.



- Set and store the dose rate.

Note: *While setting the dose rate, the service engineer is requested twice to switch off fluoro and then switch it on again.*

With the "START FC" request:

- first service switch s1 on M95 ON (video channel enable),
- then fluoro ON on generator service board D850

With the "STOP FC" request:

- first fluoro OFF on generator service board D850,
- then service switch s1 on M95 OFF (video channel enable).

Balancing the B signal level at the video output on SIRECON for ADR-STOP mode

Note: *With the UROSKOP D1 the SIRECON Compact operates in Stop mode. With the selection of "ADR-STOP", however, the manual gain for the SIRECON Compact is selected. In order to obtain approximately the same BAS signal in this mode as in AGC mode, it is necessary to match the manual gain to the AGC.*

- Connect an oscilloscope to the BAS output of the SIRECON Compact.
- Trigger on CH 1, internal, TV trigger.
- Set the trigger delay to 8.5 ms (display one line in the image center).
- Set time base 1 to 2 ms/division.
- Set time base 2 to 10 μ s/division.
- Select Zoom 1.
- Attach 2.1 mm Cu to the collimator.
- ADR-STOP must not be activated.



- Fluoro at the control console or the fluoro footswitch ON.
- Measure the BA signal (in the BAS signal).
- During fluoro select "ADR-STOP".
- With potentiometer M95/D15/R9 match the BA signal (in the BAS signal) to the value measured in AGC mode.
- Fluoro OFF.

Input gain and medium gray level of the MEMOSKOP

Input gain of the MEMOSKOP 2K

Note: *For adapting the BAS signal of the SIRECON Compact to the LUTs (brightness and contrast steps) of the MEMOSKOP 2K, a 6dB attenuation is switched between these components. The fine adjustment is made from the input gain of the MEMOSKOP 2K.*


Preliminary tasks:

- Place the 6dB attenuator between the SIRECON Compact and the MEMOSKOP 2K.

Setting:

- Connect an oscilloscope to the BAS output of the MEMOSKOP 2K. Make sure that the video cable has the right termination (75 Ohms).
- Attach 2.1 mm Cu to the collimator.
- Select Zoom 1.
- Select auto mode 1.
- Select LUT 1.
- Fluoro at the control console or the fluoro footswitch ON.
- With potentiometer R350, on board D18 of the MEMOSKOP 2K set the BA component of the BAS signal to $240 \text{ mV} \pm 25 \text{ mV}$.
- Select all four LUT steps, one after another.
- The BA component of the BAS signal must not change by more than $\pm 40 \text{ mV}$.
- Fluoro OFF.

Checking the average graytone for stability against drifting

- Connect an oscilloscope to the BAS output of the memory. Make sure that this output has a 75 Ohm terminator.
- With the  key select all four brightness/contrast steps (LUTs), one after the other.
- The BA component of the BAS signal must not change by more than $\pm 40 \text{ mV}$.

Concluding tasks

- Following the adjustments, enable the spotfilm device again as described on page 11-2.

Recorded checks

The certificates and directions required are filed with the Logbook

- Perform image quality test.
- The "DHHS Test certificate II and Acceptance Test Protocol" (see Chapter 3 of the Logbook) are completed in the factory.
(only within the scope of DHHS regulations)
Sheet "GI" must be completed at the customer site.
- Perform the partial acceptance in accordance with the X-ray Regulations.

Final procedures

- PE conductor test according to TI 236;
PE conductor resistance $\leq 0.2 \text{ ohm}$!
(Exception: Accessory rails of the patient positioning table)
- Final visual inspection:
 - Any damage?
 - All parts properly fastened?
 - Moving parts moving freely?
- Hand-over of documents to customer.

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Cover page	Higher revision status. Table Revision newly included. Contents updated.
Chapt. 1 / Page 1	Edited.
/ Page 2	Text "Calling up the service software" removed. Section "Aus dem Benutzereinstiegsmenu heraus: ..." removed. Text "Aus der DOS- Ebene heraus: Dazu" removed.
/ Page 3	Text "durch ein gesondertes Schreiben..." replaced by "as Opsis Speed Info". Text "sind auf eineme Aufkleber auf der Diskette mit der ..." removed. "Logbook, Register 3..." newly added. Edited.
/ Page 8	The value 75 has been replaced by 100 in each case.
Chapt. 2 / Page 2	"F4 key" has been replaced by "S key". Text "and perform a Reset" removed. Text "Control error: see chapter 1-9" removed. Edited.
Chapt. 3 / Page 2	"F4 key" has been replaced by "S key" in each case. Text "and perform a Reset" removed. Text "Control error: see chapter 1-9" removed. Edited.
Chapt. 4 / Page 1	Text "vertically" replaced by "horizontally". Sentence "Position the table ..." shifted.
/ Page 2	Text "F4 key" has been replaced by "S key". Text "and perform a Reset" removed. Text "Control error: see chapter 1-9" removed. Edited.
/ Page 6	Value 2 (exposures) has been replaced by 1. Text "For both tomographic times..." newly added.
Chapt. 6 / Page 2	Text starting with "Restricting the outward movement of the tabletop" newly included.
/ Page 3/4	newly added.
Chapt. 7 / Page 1	Fig. changed.
Chapt. 8 / Page 6	"oblong" added under the second •
Chapt. 10 / Page 2	Value 1 cm replaced by 1.2 cm.
Chapt. 12 / Page 1	"PLSU" added in the 1st line. Header has been supplemented with "PLSU" on all pages.
Chapt. 13 / old	Completely removed.
Chapt. 14 / old	Page 1 to 3 removed and renamed: now Chapter 13, "Final procedures".

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